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Editorial

GO TO THE POLLS AND VOTE NOVEMBER 6

DOCTORS SHOULD TABOO PARTY POLITICS—NOW IS THE TIME TO MAKE YOUR INFLUENCE COUNT—DOCTORS' TROUBLES ARE ECONOMIC PHYSICIANS HAVE TO MAKE THE CHOICE. BETWEEN A REPUBLICAN CANDIDATE WHO IS WRONG ECONOMICALLY AND A DEMOCRAT WHO IS RIGHT ECONOMICALLY—THAT WILL BE THE REAL TEST OF THE LOYALTY TO AN ECONOMIC PRINCIPLE

President Coolidge has said, "Every voter ought not merely to vote, but to vote under the inspiration of a high purpose to serve the nation." The job of doing so confronts us November 6.

By the time the physicians of the land spend even more money, and more time, to discover that neither they nor their profession can compete with practical and practicing politicians, the importance of paying more attention to election day will be brought home to every man with an "M.D." at the end of his name who calmly sits back now and lets the country be run by the unscrupulous who are not "too busy to bother" with the ballot.

What economic self-preservation the medical profession has been able to achieve has not accrued from any devotion to citizenship duties, but because of the respect in which, even in this topsyturvy day, the average citizen, still holds the medical profession.

If the doctors of Illinois would attend ever so slightly to their personal citizenship duties,—the task involving their personal participation in all elections—the result would be a near-panacea for a multitude of civic ills, that are insidiously near to eating at the very core of the essence of civilization.

It is no longer a question of a man's "getting"

or "not getting into politics." It is up to the medical men to cry "Checkmate" to politics. For the politicians of the country have already grabbed hold of the very tail of the medical profession, and are literally swinging this august body of men about with as little ceremony as if it were a yellow dog!

Blinking at facts is useless. The entire trend and achievements of legislation in the past twenty years shows how medicine is being made the pawn of politics. In another twenty years the medical profession will find itself, half throttled and altogether ham-strung unless it wakes up. Nor does "waking up" mean that any man can do this deed vicariously. The situation is up to the individual physicians of the land.

Each doctor must doff his toga of science sufficiently long to discover what is going on before the result gives him and his profession, and par consequence, the public health and the virility of civilization,—a knock-out blow. Just as soon as physicians will enter the actual arena of politics and lend their professional support to those ethical lawyers and clergymen who are accomplishing a brave futility in the effort of getting politicians out of politics, there is going to be a marked change in conditions and a restabilizing of the foundations of the world's greatest democracy.

Well has it been said that the policies of one set of physicians are in force so long as "fifty and one-tenth per cent of the votes are cast for those politicians, and the opposite policies are in force when one voter in a thousand changes his mind. It is on such extremely slight changes as these that often hangs success in any political field."

Even now, hobbled by the almost ubiquitous lethargy with which the average physician regards elections, candidates and the entire system of democratic government,—physicians have far more influence than they suspect with members of law-making bodies. Wide knowledge, good judgment, public spirit and the gift of vision are sine qua non with every successful man of medicine. Physicians everywhere should realize this imminent necessity for their stating to the public as well as to law-makers, not only the ideals of the profession, but the arguments for their adoption and their absolute bearing upon the health and the wealth of every country. This setting forth of principles, should, if indicated, be also a going forth to war for the right—a defense of medical ideals and of the country.

Everybody, everywhere may not agree with some of the ideas and dicta of President Coolidge. But every sane minded individual, *anywhere*, must coincide with these assertions of the nation's chief executive:

"Many of the founders of our government gave all their wealth and their lives for the right of franchise.

"The right of franchise is the right to vote.

"It is the most valuable heritage that the American people have.

"The right to vote is more than a privilege.

"It is a duty.

"Our government will continue to give us the opportunity for independence and freedom only if we do our duty towards the government.

"Our duty is to go to the polls and vote intelligently.

"It is our duty to see that each member of our family, who is qualified, votes.

"It is our duty to know the records of the candidates.

"To some of them you will entrust your liberty and the protection of your property."

Again are the physicians of the country besought to take heed of the electoral situation.

YOU MAY NOT BE INTERESTED IN POLITICS, BUT POLITICS IS INTERESTED IN YOU

In Its Management of Public Business It Grips Every Man's Contact with Society and with the Government—Physicians Cannot Afford to Quit Politics, for Politics Will Not Quit Them—The Quality of Politics Depends Upon the Degree of Public Interest in It

Party politics must go under the hammer for the nonce if physicians of Illinois are going to make count their influence for requisite legislation through the results of the next election.

There is no time to waste, Primaries are hanging over our heads. April 10 is a day of destiny. The voice of the candidate is heard in the land, and the voice of the physician must be

raised immediately to discover just what these candidates intend to do about matters affecting the medical profession and its dependent, the public health and welfare.

Ballots talk. More effective than any other oratory is the count at the polls. Let the physicians of Illinois show that this gift of electoral eloquence is not denied them by making themselves heard at *the time that the candidates are selected for nomination.* This preliminary right of selection will cut down the work later on.

The times demand that patriotism supersede partisanship. What a candidate for any office is going to do about the insidious red propaganda springing up stout as purslane all over the land, each and every doctor should discover without any delay.

Even the physician can't accomplish this miracle.

Doctors who think that they can dodge the perhaps tedious, but admittedly necessary task of becoming interested to the point of personal exertion in the government of the United States are mistaken. The rule holds that a man must govern his horse or be governed. Apathetic physicians who are willing to submit to the despotism of money-grabbing, wire-pulling politicians may find food for thought and spur to action on April 10 in this able editorial, appearing recently in the oldest newspaper in the State of Illinois—"THE CHICAGO JOURNAL."

This reads, under the heading "Politics"—

"There is no escaping politics. It has a bearing on almost every human interest. Frank Kent, one of the ablest of correspondents in Washington, where he represents the *Baltimore Sun,* has been writing for the publication called *The Nation's Business,* and saying that in *a greater or less degree every adult American is a politician perforce.* He may not be "interested in politics," but politics is interested in him. In its management of public business it grips every man's contact with society and with the government.

"It is impossible, Kent shows, to be born or to die, to marry or to be divorced, without politics having to do with the matter. Every tax you pay, the smooth streets and the good roads, the public schools, the fire department, the health department, the water you drink, asylums, courts, custom houses, jails and penitentiaries, the police, the post office, every law and ordinance—all spring from government, government springs from parties, and parties are in politics.

"The people can not afford to quit politics, for politics will not quit them. The quality of the politics depends upon the degree of the public's interest in it."

What better, plainer plea can be made the physician and at this crucial moment

Remember the primaries on April Tenth.

AN APPEAL TO PROSPECTIVE MEMBERS OF THE LEGISLATURE

Prospective members of the legislature should be informed on the following general principles, of interest equally to the medical profession and the general public.

We have too many laws, and too large a tax levy.

Living expense and taxes will be lowered as soon as hundreds of over-priced, interfering, recently adopted and unnecessary laws are done away with. America is mortally ill from a plague of laws. This evil is maintained at an annual cost per capita of $91, and of about $350 per family. One out of every twelve people in the United States who are over sixteen years of age, and who are gainfully employed, is on the public payroll. In the last few years this ratio has arisen from one out of every 1,000.

There are 15,000,000 employees on the public payroll according to the estimates of census statisticians. *This places an office-holder or "tax-consumer" on the backs of every two tax-producers.* Exclusive of pensioners there are almost three million public servants whose pay comes from the ever increasing taxes. A large proportion of this number is engaged in the administration and execution of superfluous statutes.

A similar situation crushed France and produced the French revolution. It was the bane and damnation of Germany.

"Americans are now compelled by law to do, and prohibited by law from doing, more things than were the citizens of autocratic Europe before the war."

We are the victims of a paternalistic regime that will eventually enslave and bankrupt the country. The *cost* of *government* has become unbearable. Too many functions of local and of state governments are being controlled by

hidden bureaus in Washington. *There is more power exercised today in these bureaus by unknown "experts," political appointees of whispering propaganda, than by the courts themselves.*

Centralization of government, bureaucracy, state subsidies and autocratic control are a poignant menace, and a fatal growth.

Bureaucracy is a curse wherever inaugurated. In the management of medical affairs it is fatal. Germany stood at the pinnacle of medical achievement thirty years ago. Under bureaucratically administered state medicine, Germany has come to have the worst medical service in the world and the poorest care for the health of the people. It will be ruinous to the health and welfare of the United States if this system is adopted in this country.

Before the coming legislature there will be presented many bills, attempting to regulate incompetently the practice of medicine and needlessly to increase taxation. Many of these bills will provide for the licensing to practice medicine, of uneducated and improperly equipped men and women.

We ask no especial favors for doctors, but we believe in a single standard of education and a thorough professional training before a man or woman can be licensed to practice the healing art or to diagnose disease.

Persons who seek a license to treat human ailment in the State of Illinois should know how to make a diagnosis of disease which is essential for the conservation of the public health.

There should be no side door short cuts to the practice of the treatment of disease in this State.

Ask your prospective representative what will be his attitude towards medical legislation designed to increase taxes and to medical legislation intended to safeguard your health and that of your neighbors and fellow-citizens.

AMERICAN PUBLIC HEALTH ASSOCIATION

An interesting feature of the 57th annual convention of the American Public Health Association convention, to be held in Chicago at the Stevens Hotel, October 15 to 19, inclusive, will be an exhibit of five "traveling health departments," or railroad cars equipped so that they can be rushed to the scene of disaster or epidemic, or so that they can carry health service from a central point to isolated districts. These will be stationed on the Illinois Central terminal tracks. Automobile health equipment will be on view in Grant Park, and 200 exhibits of the most modern health apparatus will be displayed in the Stevens exhibition hall. This year's convention will be the largest in the annals of public health history. Over 3,000 delegates will attend, including doctors, public health nurses, city and state health officers, hygienists, educators, hospital officials, sanitary engineers, and social workers. The convention has been divided into eleven main sections, covering all the chief health activities and their allied interests. Each section will be directed by an authority in that particular field. The American Child Health Association and the American Social Hygiene Association are to meet with the American Public Health Association this year.

AN INVITATION
TO MEMBERS
OF
THE ILLINOIS MEDICAL SOCIETY

The American Public Health Association has the honor to extend an invitation to the members and friends of the ILLINOIS STATE MEDICAL SOCIETY to visit the HEALTH EXHIBIT and attendant demonstrations, which are to be presented in connection with the 57th Annual Meeting of the American Public Health Association, Chicago, Hotel Stevens, October 15 to 19, 1928.

Complimentary admission will be extended to those presenting the personal card of the physician, on which the physician has inscribed a brief request that admission be granted.

In addition to the Exhibit presented by the Educational Committee of the Illinois Medical Society there will be numerous other features of special interest to the profession and the visiting public.

NOTICE

Dr. Roland L. Green, Peoria, Chairman of Committee on Arrangements for the Seventy-Ninth Annual Meeting of the State Medical Society, at Peoria, May 21-23, announces that he will be pleased to supply the requirements of the Sections, through the proper committees, upon notice.

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BEG YOUR PARDON

For the virile, apt and poignant quotations from the "Woman Patriot" in the article "Women Flay Feminist Bloc and Children's Bureau Women Aroused to Fight Anti-Home Legislation Directly Affecting Themselves and Their Children."

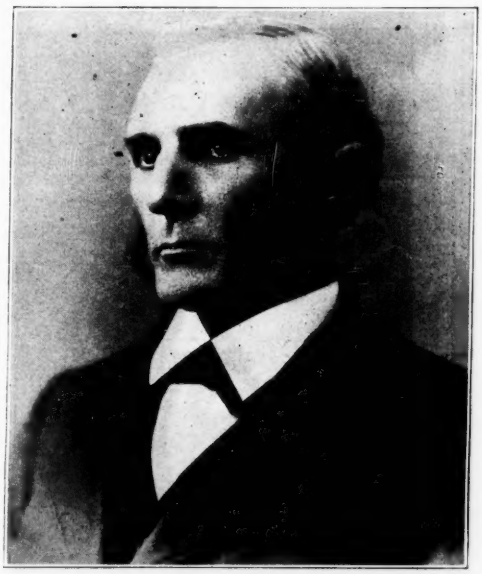
In the issue of August, 1928, ILLINOIS MEDICAL JOURNAL such indebtedness is owned through the furtherance of these statements in clearing away the mists with which much of the current bureaucratic trend is regarded that it seems difficult to find any words sufficiently comprehensive to make apology for that compositor's error by which credit for these quotations was omitted at the time the article was published. As the publishers, editors and staff of "The Woman Patriot" are themselves in this business the ease with which such error is made and the difficulty with which it is remedied are matters of such mutual knowledge that it would seem plausible that after all this statement may be the error's "own best excuse" even if the error itself were not.

HODGEN-MUDD

PIKE COUNTY (ILLINOIS) MEDICAL SOCIETY TO HONOR THEIR MEMORY

On Tuesday, October 30, 1928, the Pike County (Illinois) Medical Society will unveil a granite marker in the Public Square of Pittsfield to the memory of John Thomson Hodgen and Henry Hodgen Mudd. These outstanding surgeons of the past generation spent their boyhood in Pittsfield and the physicians of Pike County will honor them in a permanent way. A few years ago Pike County unveiled a marker to two other of its many illustrious boys—John G. Nicolay and John Hay, both later secretaries of Abraham Lincoln and both achieving signal honors in literature, history and diplomacy. Their "Life of Abraham Lincoln" is the most comprehensive ever written and the "Pike County Ballads" are universally known.

The two to be honored in the coming event



DR. JOHN THOMSON HODGEN

have achieved quite as much in their chosen field of surgery. All physicians and their friends are urged to attend this unique celebration. There will be a luncheon at noon after which a number of prominent surgeons and physicians will speak of the achievements of these two honored members of the medical profession. All will not only be welcome but are urged to join the members of the Pike County Medical Society in making this a notable occasion in Illinois medicine.

Pittsfield can be reached from either the East or the West by hard-road and the luncheon and principal speaking will be in-doors so that weather conditions should not keep one at home.

John T. Hodgen was born at Hodgenville, Ky.,

in 1826. His father, Jacob Hodgen, moved to Illinois and young Hodgen spent his school-boy years in Pittsfield. He took his collegiate degree at Bethany College, West Virginia, and in his twentieth year entered the Medical Department of the University of Missouri, from which he graduated in 1848. From that time until his death in 1882 he was identified with one or more of the medical institutions of St. Louis. He began as interne at the St. Louis City Hospital and served later as demonstrator of Anatomy, Professor of Anatomy, Physiology, Surgical Anatomy, Clinical Anatomy, Clinical Surgery and Surgery

Dr. Henry Hodgen Mudd

and as Dean of the Faculty. He was a teacher all his life, although an active and popular practitioner of surgery whose services were widely in demand as a consultant as well as an operator. But his activities did not end here. America has produced few surgeons of greater versatility of mind and hand than John T. Hodgen.

Henry Hodgen Mudd was born at Pittsfield, Ill., in 1844. He was a nephew, assistant colleague and successor to John T. Hodgen, in the fields of medical teaching and practice in St. Louis. He gave brilliant service during the Civil War as assistant Surgeon General. After the war he entered practice with his uncle in St. Louis and succeeded to the Professorship of Anatomy, surgical anatomy, clinical surgery, and surgery and was Dean of the Faculty.

Both contributed largely to medical literature and took an active part in medical societies, local, state, national and international.

The Pike County Medical Society will honor itself by preserving the names of these two illustrious physicians and invite their friends and neighbors to join them in a noted occasion.

VOLUNTARY AND PUBLIC HEALTH AGENCIES SHOULD CONSULT THE MEDICAL PROFESSION BEFORE RATHER THAN AFTER LAUNCHING THEIR ENTERPRISES

An outstanding mistake that public health organizations, especially voluntary or private health agencies, have made in the past, and which in large part has led to gross misunderstandings between these agencies and the medical profession, lies in not taking the medical profession, through its constituted society, into their confidence from the inception of public health programs and together working out such programs and plans of procedure as appear to be advisable. An excellent example of this is shown in the difficulties recently experienced in the health organizations of the City of Knoxville, Tenn.

Prior to the recent adjustment of public health and clinical activities in the City of Knoxville, there existed conditions involving a degree of conflict between the voluntary health agencies, the public health authorities and the medical profession such as are more or less common to many American municipalities.

As in most instances, the Knoxville situation was developed from a total disregard by the voluntary health agencies, and to a lesser extent by the official health body, of the interests of the medical profession in the formulation of plans for public clinics. Here, as is quite commonly the practice, programs for clinical procedures were set up by a lay group according to its own conceptions of service, without proper knowledge or regard for the needs of such services and without the guidance or advice of the medical profession through the agency of its local so-

ciety. The medical profession was consulted only after all other plans for service had been made ready and when medical skill became essential to further functioning. Then the doctors were asked to contribute their professional services for the care of clinic patrons but the doctors were not accorded the right to determine clinic policies, especially those relating to the determination of a patient's eligibility for free service. The patient's financial status and right to free service was determined by the lay officials who were actuated largely by a desire to make an attendance record for the clinic. The service was operated on this basis for some months.

As a result of these mistaken policies, the clinic became a source of contention and eventually was forced to close through withdrawal of all medical forces from the staff.

For the adjustment of the matter the American Public Health Association, then as now, engaged in the study of local health and clinic operations with a view to their placement on a well-approved and harmonious basis of operation, was invited to survey the situation and present a plan for future operation. The assignment was given to Dr. C. St. Clair Drake of Illinois, attachè of the American Public Health Association in this field of special service.

Outcome of studies made were:

(a) The transfer of all clinics, excepting tuberculosis and other clinic services of a strictly public health character, to the city hospital under the direction of the medical staff;

(b) The organization of a medical advisory board of five members, two nominated by the medical society, to assist the local health officer in an advisory capacity;

(c) The erection of a Citizens' Health Council to serve as an agency to harmonize the activities of all voluntary and official health activities with those of the medical profession; and

(d) The housing of all public health agencies, official and voluntary, in a "health center" under the coordinating direction of the city health officer who, as previously stated, acts in harmony with the decisions of his advisory boards, medical and lay. Here also are maintained such clinic activities as are mutually agreed to as essential to proper public health functioning.

To date, this plan of organization appears to be operating satisfactorily. It affords that contact between the public health group and the medical profession that is indispensable to a proper mutual appreciation of each other's services and to a conduct of activities in such manner as leads to harmonious action and a larger measure of real service to the public.

Dr. L. L. Sheddon of Knoxville tells aptly the story of the "fight:"

The story of the controversy between the Knox County Medical Society and the Knoxville Health Center is lengthy. It would be impossible for one to give a clear and concise account without consuming too much time and space.

Suffice it to say that the Knoxville Health Center was strictly a lay organization. It was finally absorbed by and placed under the jurisdiction of the Red Cross. This organization succeeded in getting aid and assistance from the City and State Health Authorities. A Venereal Disease Clinic aided by a special State-aid appropriation made by the Federal Government was added. However, the whole management and policies were dictated by the Red Cross. The clinic became as its name indicated a "Free Clinic."

The organization was idealistic in its proposed intentions. As is the case in most Socialistic movements it is absolutely impracticable. As is the case in all clinics the medical profession of the city was called upon to act as staff which they readily agreed to do. It soon developed that members of the staff were merely puppets at the beck and call of the Red Cross and of other lay organizations. Staff members were given to understand that their only function was to treat any and all patients coming under their hands and any attempt to correct abuses were promptly checked.

Patients were coming to the clinic from all over this section of the state, a number of whom were amply able to pay for services but who had been told that if they would come to Knoxville to the Free Clinic they could get treatment free.

This was especially true of the E. E. N. and T. and Venereal Disease clinics. The Health Center openly stated that they would treat all such cases free of charge. The clinic employed two or three all-time and part-time physicians especially in the Venereal Disease Clinic. When any protest came from the profession they were unceremoniously informed that if the members of the Medical Society refused to act and continue to be bossed and dominated by this lay organization that all-time physicians would be hired in replacement.

This clinic was one of the chief beneficiaries of the

"Community Chest," and was also getting an appropriation from the City and State.

The Knox County Medical Society determined to let the public know how the clinic was being financed and conducted, and the privileges of the abused, and how unnecessary was the organization.

The fact was set forth that Knoxville had its municipal Hospital and outdoor clinic where all indigent applicants could get treatment; that the taxpayers were paying for such treatment and that contributions to the Community Chest were being used to finance a clinic for the treatment of those who were not entitled to free treatment not only in Knoxville but from hundreds of miles of surrounding territory. This known to the public when it came time to solicit funds for the cause backers found it impossible to do so.

Doctors took the matter up in the Medical Society and requested all members of the Society to withdraw from the Staff until such time as the Clinic could be placed in a position where the medical profession could have absolute control. No threats were made but the sentiment of the Society was so unanimously expressed against the abuses practiced and the contempt shown its members that every member of the Staff of the Clinic resigned and it was forced to close for lack of a Staff. They did not have the funds to employ all-time men.

The medical profession of Knoxville stood together and effectually put this very obnoxious and incompetent institution out of business.

Dr. L. L. Sheddon and Dr. E. R. Zemp of Knoxville have written for the ILLINOIS MEDICAL JOURNAL the following apt and interesting account of the controversy

Writes Dr. Sheddon:

Similar evils can be corrected anywhere by letting taxpayers and charity contributors know what is going on. *No clinic can be conducted without Doctors* and if the members of the profession can be brought together in this organized capacity they—the profession—can absolutely dictate most capably the policies of hospitals and clinics.

The Knoxville Clinic was closed for several months. As a part of the City Health Department was housed in the building and recognition was given to need for a certain kind of clinic, the health authorities secured the assistance of Doctor C. St. Clair Drake, an experienced public health man, now attached to the American Public Health Association. Now the Clinic is operating under the plan submitted by Doctor Drake and adopted by the Medical Society of Knoxville. This Clinic is entirely a Diagnostic Clinic. T. B. suspects and mental defectives are sent there for observation, also some Venereal Disease suspects.

No treatment of any kind is carried out there. Such individuals are sent to the City Hospital and Clinic.

The management has been taken entirely out of the hands of lay organizations and is now absolutely controlled by members of the Knox County Medical Society, to the great benefit both or increased public health and decreased public expense.

In addition to other citations Dr. Zemp has kindly loaned some of the interesting correspondence in this regard.

Knoxville, Tenn., March 28, 1928.

Dear Doctor Whalen:

As requested in your letter of March 17 I am collecting the data pertaining to our fight with the Red Cross in Knoxville.

Up to 1926 the clinic situation in Knoxville was unbearable. It was dominated almost entirely by laymen, chiefly of the female persuasion. These leaders became very insolent, even dictating to the various members of the medical staff what physicians could, or could not do. Our Medical Society determined to end this misrule of ignorance and bigotry. We went after them hammer and tongs, forced all the medical staff to resign and left the Clinic helpless. The condition is still unsatisfactory, but much better than it was. The details will follow in a subsequent letter. I am sending you a letter from Dr. Jesse C. Hill, secretary of Knox County Medical Society, that is self explanatory.

Sincerely yours,

E. R. Zemp, M.D.

KNOX COUNTY MEDICAL SOCIETY

March 28, 1928.

Dr. E. R. Zemp,
Knoxville, Tenn.

Dear Dr. Zemp:

The following is a part of the minutes of the Knox County Medical Society:

"The Knox County Medical Society passed the following resolution January 12, 1926: 'Whereas the Physicians composing the Staff of the Knoxville Health Center, as members of this Society, have asked the Knox County Medical Society for some action, or expression, in regard to the rules and regulations which will be necessary to bring the Health Center to a place where they can consistently and conscientiously function as such staff and still keep in harmony, good standing, and fellowship with this organization, and

"WHEREAS, these gentlemen are our brother physicians, whom we honor and respect, as members of this Society are entitled to know just what the sentiments of this organization are toward said Health Center as at present conducted, and

"WHEREAS, the Board of Directors of the Knoxville Health Center has expressed a desire to know what has brought about such complaints and criticisms, is entitled to know exactly how this Society feels toward said Health Center, and

"WHEREAS: it is plainly the duty of all municipalities to make provisions for the treatment of its un-

fortunate and indigent population, and the duty of the State, County and municipality to engage in such public health activities as may be necessary to conserve and protect the health of the general public! To provide means of carrying out such public health activities as protection to food and water supplies, exercising vaccination and quarantine regulations against epidemic diseases: to enact laws and make provisions for such purposes as will enable health officers to put such measures into operation, and to enforce compliance therewith, and

"WHEREAS, the City of Knoxville, through its legally constituted authorities, has made such provisions for the care of its indigent sick, both medical and surgical, at the Knoxville General Hospital with its Out-Patient department, for the maintenance of which the citizens of Knoxville are taxed a sufficient amount to amply accomplish these objectives and the City of Knoxville and County of Knox have organizations in their municipal and County Boards of Health to exercise all such public health supervision as is necessary to protect the lives and health of the citizenship of this community, and

"WHEREAS, the Red Cross as an organization, has no place in public health work, no such activities having ever been contemplated by the founders of this organization, and, prior to the World War, no such functions were performed by the Red Cross. It was, and is a great institution, international in scope, organized for the purpose of meeting great emergencies, such as wars, earthquakes, fires, storms, and pestilence where large numbers of people are afflicted or rendered homeless, and to divert the funds of the Red Cross to public health work in an improper use of such funds, and is exercising a function which is clearly the duty of the State, County and municipality, and

"WHEREAS, the American Medical Association, through its House of Delegates, which is the law-making and executing body of that Association, has gone on record at different times against, and strongly and unanimously condemned the Red Cross organization for its pernicious meddling with and usurping of the powers of the public health service, a function for which it was not created, and

"WHEREAS, the U. S. state and county Public Health Departments were all organized for specific purposes, such purposes being educational and advisory. Educational by instructing individuals as to personal and general measures which should be adopted to protect themselves against disease. Instructing state, county, and municipal authorities about such things as the drainage of swamps in malarious and yellow fever localities; how to protect water and food supplies and general sanitation; to devise quarantine and other protective measures to insure the health of the general public. It having never been contemplated that they should attempt to supply treatment to individuals for any form of ailment whatsoever, and

"WHEREAS, as we understand the status of affairs, the venereal disease department of the Health Center is supposed to come under the head of public health activity, and

"WHEREAS, the idea of controlling venereal disease through venereal disease clinics may be ideal in sentiment, as is true in many other socialistic movements, they often become so idealistic that they become impractical and operate in a diametrically opposite direction to the object to be attained, and

"WHEREAS, it is apparent to any thinking individual that many subjects of venereal disease are victims of their own lusts and dissipations, and that any individual who is able to work and is possessed of all his faculties, who presents himself soliciting free venereal disease treatment is, as shown by such action, a vagrant and should be treated as such, and

WHEREAS, all treatment of such characters is, from a public health standpoint, useless until such laws are enacted and rigidly enforced as will enable our health officers to declare them vagrants and to confine them and hold them until such time as they can be pronounced uninfectious by a competent health officer. Free treatment of such individuals will not prove effective in protecting the public against such diseases, but will only act to encourage the dissemination of the same, and

"WHEREAS, it has come to the attention of various and sundry members of this Society, who are in a position to be competent judges, that a great many individuals, not only of Knoxville and Knox County, but many from adjoining counties are treated at the Health Center who are able to pay for their treatment, if not full fees, a reasonable amount, and

"WHEREAS, paternalism such as this can only tend to bring about a state of Socialism and is not helpful to the recipient of such beneficence, but is, in a measure, degrading and only encouraging them to depend more and more upon charity, causing them to make less effort upon their own part. Such beneficence where so freely bestowed we believe acts so harmfully as to outweigh all of the good which may be accomplished, and

"WHEREAS, the colored physicians of Knoxville have brought to the attention of the Knox County Medical Society that at least ninety percent of the colored population are considered eligible for, and entitled to, free medical services under the present ruling and scale of earnings, as set forth by the managers of the Health Center, thus depriving them of a greater portion of their legitimate practice, much to their financial distress, and to the moral and social detriment of the colored population, and

"WHEREAS, such free treatment of patients who are able to pay, either in part of in whole, may not affect some of the members of this Society, there are many more who have spent long years and gone to great expense to prepare themselves to treat such cases, and

who, prior to the establishment of the Health Center, were receiving thousands of dollars compensation from these individuals and doing them no injustice, on the other hand hedping them to maintain their independence and self-respect, and

"WHEREAS, it has been stated upon the floor of this Society upon numerous occasions and by sundry members of this Society that they have, when attempting to learn something of the financial ability of certain applicants for treatment to pay for services rendered, been told that they had absolutely no right or business to ask such questions and have been unceremoniously notified to desist from such investigation, and

"WHEREAS, it is currently charged and generally believed that the nursing service from the Red Cross Society, the school nurses and public health nurses, which operate from the Health Center, are, in many instances, nothing more nor less than advance agents and solicitors for said Health Center, advising many people with whom they come in contact to go to the Health Center for various and sundry treatments much to the annoyance and detriment of the medical profession, and

"WHEREAS, said Health Center has become, because of the way it has been and is being conducted, a constant source of annoyance, dissatisfaction, and detriment to this Society and bringing about a great deal of criticism upon the city authorities, especially the public welfare department of the same, therefore, be it

"*Resolved,* by the Knox County Medical Society in regular session assembled,

"First, that we do most heartily disapprove of and severely condemn the Knoxville Health Center as it has been and is being conducted;

"Second, that we advise and most earnestly and respectfully request all members of this Society to cease their activities at the said Health Center until such time as it can be placed in such position as to remedy the evils complained of, and until more latitude, freedom, and consideration can be granted to members of the medical profession of Knoxville; and Be it further

"*Resolved,* that in view of the fact that the City of Knoxville has made ample provision for the care and treatment of its indigent sick through the agencies of the City Physician and its General Hospital with its Out-Patient department, for the maintenance of which the citizens of the City are taxed, and which are administered to and attended by physicians of Knoxville freely and willingly, and that for the Red Cross Association to engage in Public Health activites has been unanimously and severely condemned by the House of Delegates of the American Medical Association more times than one; that the Public Health activities can be much more effectively and satisfactorily carried out through the City Board of Health, and that there is no legitimate excuse for the existence of such an institution as the Health Center of Knoxville; Be it further

"*Resolved,* that the Knox County Medical Society does advise and recommend to the director of Public Welfare of the City of Knoxville that he withdraw all financial and moral support from said Health Center and Venereal Clinic and to concentrate such activities in and around the Knoxville General Hospital and the Board of Health; and Be it further

"*Resolved,* that in view of the fact that as not only useless but hurtful effects are being brought about and people pauperized that should and could be self-sustaining, thus further adding to their misfortunes and degradation, and that such so-called charity and uplift activities only tend to encourage Socialism, Communism, and Bolshevism, that we advise and request the directors and managers of the Community Chest in the future to eliminate the Knoxville Health Center as one of their beneficiaries and to concentrate their efforts toward the true and legitimate charities of this community."

"The Society sent the following letter to Dr. V. D. Holloway, January 13, 1926: 'Dear Doctor Holloway: The Knox County Medical Society in regular session January 12, 1926 voted that the Society respectively requests your Medical Staff withdraw their services from the Knoxville Health Center and Venereal Disease Clinic. Very truly yours, DR. JESSE C. HILL, Secretary Knox County Medical Society.'"

"The Society sent the following letter to Hon. Frank Bane, Director of Public Welfare, Knoxville, Tennessee, January 16, 1926: 'The Knox County Medical Society at its regular weekly meeting, Tuesday, January 12, 1926, respectively requested the Doctors doing service at the Knoxville Health Center and Venereal Disease Clinic to withdraw their services from same.

"'The Secretary of said Society was instructed to write Hon. Frank Bane, Director of Public Welfare, and respectively request that the City of Knoxville withdraw its moral and financial support from the Knoxville Health Center and Venereal Disease Clinic. Very truly yours, JESSE C. HILL, M. D., Secretary Knox County Medical Society. P. S. Resolution in full in my possession. Will be glad for you to read same should you so desire."

"The Society sent the following letter to Directors of Community Chest, January 19, 1926: 'The Knox County Medical Society, at a regular meeting held January 12, 1926, passed the following resolution: Resolved that in view of the fact that as not only useless but hurtful facts are being brought about and people pauperized that should and could be self-sustaining, thus further adding to their misfortune and degradation, and that such so-called charity and uplift activities only tend to encourage Socialism, Communism, and Bolshevism, that we advise and request the Directors and Managers of the Community Chest in the future to eliminate the Knoxville Health Center as one of its beneficiaries and to concentrate their efforts toward the true and legitimate charities of this community. Very truly yours, DR. JESSE C. HILL, Secretary Knox County Medical Society.'"

"On August 13, 1926, Dr. Drake, of the American Health Society, presented to the Knox County Medical Society a plan on which he proposed the Health Center should be run as a diagnostic clinic for conditions pertaining to Public Health and no treatment was to

be administered. The Knox County Medical Society approved the plan, and same was instituted a short time thereafter.

"Yours very truly,
"JESSE C. HILL, M. D.
"Secretary Knox Co. Med. Society.'"

Correspondence

IS THE NATIONAL TUBERCULOSIS ASSOCIATION GOING BEYOND ITS PROPER ACTIVITIES?

Chicago, May 25, 1928.

To the Editor:

While believing that as at the present time officered, the Illinois Tuberculosis and Public Health Association is quite safe in scope of activity it would seem that the association is a menace to the public as well as to medicine. There are many physicians in this state who feel that this organization is not only above reproach but is a very commendable group, still there are some questions one may well ask.

1. Why did the National Tuberculosis Association advocate the change in name of the State organizations to Tuberculosis and Public Health Associations? This has not only been done in Illinois but in other states and it is not only resented in Illinois but elsewhere.

2. The activities of the National Tuberculosis Association and other state groups are supported by the sale of Christmas seals which are sold ostensibly to combat tuberculosis. Is it not a breach of faith to sell these seals for one thing and divert the funds received to other activities?

3. The Chicago Tuberculosis Institute which is the Chicago organization receiving the money from the sale of seals in Cook County is affiliated *directly* with the National Tuberculosis Association and not through the medium of the Illinois Tuberculosis and Public Health Association. It is generally conceded that the Chicago Tuberculosis Institute has gone beyond its proper limit of activities. If this be true, why should not such action allow other organizations affiliated with the National Tuberculosis Association go beyond their proper activities through such precedent? Has the National Tuberculosis Association any well defined policies for affiliated bodies? Has it any disciplinary powers on other affiliated bodies?

4. Is it not a paradox that many physicians in the Chicago Medical Society refuse to buy Christmas seals because these doctors feel that the funds are not fairly administered, while we find physicians in other parts of the State enthusiastically advocating this sale? Is this because of poor coordination in the work of the bodies affiliated with the National Tuberculosis Association or is it a lack of understanding on the parts of the physicians?

G. HENRY MUNDT, M. D.

THE MEDICAL PROFESSION SHOULD TURN ITS ATTENTION TO VOLUNTEER HEALTH AGENCIES, AS THESE ARE ATTEMPTING TO DOMINATE THE HEALTH PROBLEM IN THE UNITED STATES

NATIONAL TUBERCULOSIS ASSOCIATION TRYING TO BRING ABOUT STATE MEDICINE

Montgomery, Ala., May 10, 1928.

To the Editor:

I am deeply interested in getting well organized state boards of health functioning properly under the dominance of the medical profession in every state West of New York. The East, I am afraid, is hopeless. The East is satisfied with *itself* and the things it *thinks* it knows.

I am sorry you were not at the American Medical Association meeting on March 30 last. Dr. West called it "a talk fest" in the discussion of my paper a few days ago, but it was quite illuminating to me. I got a good deal out of the views expressed by the representatives of the volunteer agencies with headquarters in New York City. I wish the medical profession could turn its attention to these volunteer agencies, which are undertaking to dominate health problems in the United States, and also through the National Tuberculosis Association, bring about state medicine.

Public health work means to me the protection of the group from communicable diseases and the cleansing of the blood stream. A public health officer means to me a doctor thoroughly trained in the science of medicine with scrupulous regard for the ethics and traditions of the profession. In other words, public health is a medical specialty and cannot succeed on any other basis. I think if the profession could wake

up to the tremendous possibilities which would grow out of dominance of the public health field by the medical profession and recognition by it of the fact that it is the coming specialty of medicine, the opportunities for service to the race would be limitless. Had it ever occurred to you that through such an organization, led and dominated by the medical group of each state, what possibilities would grow out of locating in the public schools the potential criminals, the potential paranoiacs, the dementia precox, and maniac depressant cases before they were twelve years old?

I feel as if I were simply blazing a trail in Alabama, acquiring leadership by the medical profession in this field by the control of communicable diseases. This is simply a stepping stone. The work of the future health officer will be to locate potential mental and moral degenerates among the public school children, and work out such means for their control as will lift the present burden of caring for these people off the shoulders of society. This can only be done by the medical group. We have been too slow to come into our own, too slow to recognize the tremendous opportunities for service which lie in the development of this field. There can be no state medicine when the medical group in each state dominates the health work of the state.

SAMUEL WALLACE WELCH, M. D.,
State Health Officer.

WHAT IF NOBODY CARED?—ILLINOIS AN OUTSTANDING STATE REGARDING THE NECESSARY EDUCATIONAL SAFEGUARDS

In the last session of the Legislature a measure was introduced under the caption of House Bill 411 which provided ways and means for extending the privileges of the University of Illinois to Homeopathy, Sanatology, Osteopathy, Chiropractic, Naprapathy, and Naturopathy schools for teaching and demonstrating their methods in the art of healing, promotion of health and prevention of disease.

It is needless to say that the Illinois State Medical Society opposed and defeated this measure despite the fact that a large group of drugless healers was clamoring for such a law. This was only one of approximately fifty measures that were introduced in that session, each of which was inimical to the public health.

At no time in the history of the Illinois State Medical Society has it fought a drugless healer per se, but the political program of the Society is merely one of protection for the public.

Of course, while it would seem that the fight is directed toward the drugless healer, it is only the laws that such pretender attempts to pass—which would legalize and lower the present requirements—that are of interest to the physicians, and if NOBODY CARED, or if physicians were not willing to accept the responsibility for guiding the legislative thought regarding public health matters, bills of the above type would be passed without difficulty.

In the last session of the Legislature another rather innocent-looking bill was passed which recognized correspondence schools, allowing such organizations to be recognized by the Department of Registration and Education, which Department upon recognition would furnish a statement approving such school, thus allowing the proposed school to use that statement in advertising propaganda. That bill is a law today, and if NOBODY CARED the statement in the preamble of the bill excluding courses in medicine, dentistry, and pharmacy would never have appeared.

Illinois finds itself today as an outstanding state regarding the necessary educational safeguards for those who desire to treat the sick, and this is true mainly because the Illinois State Medical Society has assumed their duty of properly keeping in close contact with the legislative situation.

Some years ago the banking fraternity showed the fallacy of privately owned banks in the State of Illinois, due to the great losses sustained by depositors. These banks have been abolished. In the last session of the Legislature there was a radical change in the insurance law regarding what is known as County Mutual Associations, which were literally robbing policyholders, and inasmuch as these associations were incorporated and reportable to the Secretary of State's Department the Insurance Superintendent of the State of Illinois was helpless.

Insurance companies banded together and showed the Legislature the fallacy of the law and it was altered so that all such associations

must report to, and be examined by, the State Insurance Department. All this was done for the benefit of the people. Surely no one could accuse the banker sin the first instance, or the insurance companies in the second instance, of any selfish desire in having these vicious laws corrected. Much better, however, would have been a careful supervision of all bills introduced, thus probably preventing such measures from becoming laws. Instead, a great deal of damage was done before correction was undertaken.

This is why the Legislative Committee of your Society is asking the individual help of all members in preventing these mistakes by our lawmaking body.

Two years ago a law radically curtailing the police power of City Health Departments was allowed to be "kissed" through the Legislature by a group of earnest but misdirected women. It took a long executive session in the governor's office to obtain the necessary veto to prevent the silly measure from becong a law.

The Illinois State Medical Society stood adamantine against the Sheppard-Towner law in 1921. A great many unkind invectives were hurled at Dr. Whalen, the Editor of our State Journal, and Dr. Krafft and his committee who came to Springfield and worked ceaselessly for the defeat of that measure. At the time the Bill was pending, and a very large lobby was holding their sessions, the able address of Dr. W. D. Chapman, the Chairman of the present Council, was listened to most attentively by the Legislative Committee.

Illinois, in holding out and in being the only large state which has denied the necessity for such a paternalistic measure, has been quoted by even the proponents of the Bill as being one of the outstanding reasons that Congress decided to abolish the law. The physicians knew what they were recommending to the Legislature, maintaining that they were capable of outlining for the State of Illinois a better plan to save mothers and babies, and in the daily press of yesterday we notice from the report of Dr. I. D. Rawlings, the State Health Superintendent, that Illinois had the lowest infant mortality rate, that of 64.4 per 1000, in her history, and one that compares very favorably with that of the nation at large as well as with other states.

Dr. Rawlings says, "Without doubt the improved economic conditions are a factor but it is secondary in that it makes possible the wide utilization of medical and sanitary knowledge." This is rather conclusive evidence that Illinois does not need supervision from Washington regarding the health of its people or the conservation of mothers and babies, and yet there is hovering on the horizon in Washington a more atrocious bill along these lines, which undoubtedly will be brought before the Illinois Legislature in 1929.

Earnestly it is asked that physicians individually see the candidates who are seeking election in November, ascertain their views upon matters of this sort, correct the evil influences that drugless healers' friends are pouring into candidates each week, and try to convince candidates that the medical men have always stood for sane and sound laws for the protection of the citizens of Illinois.

Above all, see, doctor, that your vote is cast in November, and also see that those members of your family who are eligible to vote exercise citizenship rights.

Yours very truly,

J. R. NEAL, M. D.,

Chairman Legislative Committee.

HOW TO KILL A MEDICAL SOCIETY

Don't come to the meetings. If you do come, come late. If the weather doesn't suit you, don't think of coming. If you do attend a meeting, find fault with the work of the officers and other members. Never accept office, as it is easier to criticize than to do things. Nevertheless, get sore if you are not appointed to a committee; but if you are, do not attend the committee meetings.

If asked by the chairman to give your opinion regarding some important matter, tell him you have nothing to say. After the meeting, tell everyone how things ought to be done. Do nothing more than is absolutely necessary, but when other members roll up their sleeves and willingly and unselfishly use their ability to help matters along, howl that the organization is being run by a clique. Hold back your dues as long as possible, or don't pay them at all. Don't bother about getting new members.—*The Aesculapian.*

DUE NOTICE

The farm problem, as reported by a western Texas paper:

"Positively no more baptizing in my pasture. Twice in the last week my gates have been left open by Christian people, and I can't afford to chase cattle over three counties just to save a few sinners."

VALUE OF PRENATAL CARE

The analysis made by Tracy and First of 1,001 cases showed that careful prenatal care as carried out in all well regulated clinics saves many patients later complications and reduces maternal and fetal mortality. Watchful waiting and allowing nature its full opportunity will diminish the incidence of forceps deliveries and extensive lacerations. The majority of cases of placenta praevia can be successfully treated conservatively. Only a very small percentage of cases require cesarean section. Contracted pelves are only relative, and much depends on the size and position of the child. Unless there is a decided disproportion, the patient should be given a real test of labor before a cesarean section is elected. Pregnant women with cardiac diseases should be treated by prolonged rest in bed, proper medication and analgesic remedies during the first stage of labor and then be delivered with forceps under light anesthesia. Elimination of the abdominal binder after twelve hours, position and exercises will materially reduce the number of retrodisplacements of the uterus. The postpuerperal supervision and care of the patient is most beneficial and should receive more earnest and efficient attention.—*Amer. J. Obst. & Gyn.*, July, 1928.

ENDEMIC GOITER AND IODINE

Briefly, we have never seen an authentic case of hyperthyroidism in children that could by any stretch of the imagination be attributed to the prophylaxis of goiter through the schools. This point seems agreed upon by all. However, the old argument about long-standing goiters in adults put forth by Rilliet in 1858 seems to live on. . . . Every survey or study only emphasizes the importance of prevention during pregnancy. The relation of these congenital defects to the adenomatous or tumorous conditions of later life is more and more appreciated with each careful study. We all know the disappointments in our attempts to control or treat these tumorous thyroids. Therefore, we cannot stress this point too strongly, and in endemic districts we need the assistance of all prospective mothers and of the physicians who educate and direct them through this important period. It is during pregnancy that the general use of iodized salt is of greatest value. For those under the supervision of their physicians or those who accept the responsibility themselves, one or two iodostarin tablets a week throughout pregnancy and lactation would be excellent. —Kimball, O. P.: Endemic Goiter and Public Health, *Am. J. Pub. Health*, May, 1928.

RESULTS OF MALARIA TREATMENT OF GENERAL PARALYSIS

Of 100 cases of general paralysis treated with malaria by Levin, without subsequent antisyphilitic treatment, complete remissions resulted in twenty-six; in ten there were partial remissions; in fourteen there was improvement; in twenty-one there was no improvement, and twenty-nine terminated fatally. A total of 50 per cent. were benefited by the treatment. The durations of the complete remissions to date extend from four months to thirty-one months. The grandiose or expansive type of general paralysis offers the best progress, 84 per cent. of the cases of this variety showing definite improvement subsequent to the malaria injections. The prognosis in the demented and the agitated types is much more dubious, the improvement rates being 45 per cent. and 33 per cent., respectively. The duration of the psychoses prior to treatment bears a distinct relationship to the improvement rate. The best results were obtained with the patients whose psychoses were of less than four months' duration. Sixty-eight per cent. of this group were benefited, as compared with 35 per cent. in whom the disease lasted a year or more. Males seem to respond to treatment better than do females. The total improvement rate of the males was 53 per cent., of the females 36 per cent. There is no distinct correlation between the clinical and the serologic observations subsequent to malaria treatment.—*New York State Journal of Medicine*, May 15, 1928.

GROWTH OF CULTS LACK OF COMMON SENSE

It is not amiss to note that, during the period of greatest development of medical science, development not only in its content but also in its intent, there has been at the same time in this country the greatest development of favorable inclination toward weird hypotheses concerning the character of disease and methods of its treatment that the world has ever seen. That this is not due merely to the dissemination of new knowledge, to those strata of society which previously had never thought and which are now incapable of logical thought, is amply demonstrated by the growth of cults with a clientele made up in large measure of those members of society who have been by tradition and training accustomed to thinking. The aberration of their mental processes is not due to moronic heredity but perhaps in large measure to lack of contacts with enough individuals with sound common sense.—Wilson, L. B.: *Minnesota Med.* 11:365 (June), 1928.

IT DIDN'T COST ANYTHING

A Hebrew storekeeper, much to the astonishment of his neighbors, suddenly decorated his shop window with a gorgeous new blind. It was the sensation of the day, and few of his brethren failed to make some remark to him about it.

"Nice blind you've got there, Isaac," said one.

"Yes, Aaron."

"How much did it cost you, Isaac?"

"It didn't cost me anything, Aaron. My customers paid for it."

"What! Your customers paid for it?"

"Yes, Aaron. I put a leedle box on my counter 'for the blind,' and they paid for it."—*Canadian Pharmaceutical Journal.*

Original Articles

CARCINOMA OF THE LARGE INTESTINE INCLUDING THE RECTUM*

IRVIN ABELL, M. D.,
LOUISVILLE, KENTUCKY

A somewhat limited experience with carcinoma of the large intestine including the rectum is presented as a basis for the discussion of some of the problems connected therewith. The story, as is common with carcinoma elsewhere, is a dismal one and is offered as a plea for early recognition of the disease and its radical treatment. The technique of surgery of the colon and rectum, based upon anatomical, physiological and pathological knowledge, has reached a high stage of development. The operability of cancer in these organs has been thereby greatly increased at the expense of a higher operative mortality, but with the result of greater prolongation of life. It is improbable that much further technical improvement permitting a wider ablation of cancer bearing tissue will be evolved. If this assumption be true, then, in the light of our present knowledge, the hope for reduction of mortality from cancer of the colon and rectum must lie in its earlier diagnosis and a radical removal. The age at which its greatest incidence is observed and the relentless character of the disease with its consequent reduction of an already waning vitality combine to make the operative mortality a high one, while the number of patients remaining free from disease following operation is discouragingly small. Unfortunately this is the usual history of cancer in other locations with few exceptions, and yet there are certain features about cancer of the colon, notably its slow growth with tardiness of metastasis to readily removable gland groups, which should make the outlook more favorable with the opportunity for the radical treatment which an early diagnosis affords. The material upon which this paper is based comprises 77 cases, observed from 1915 up to and including 1927, the growth being in the colon in 53 and in the rectum in 24. Of this number 33, 25 in the colon and 8 in the rectum, were subjected to radical operation; in 23 some type of palliative operation, chiefly colostomy, or a short-circuiting enterocolostomy or colocolostomy was done, while in 21 the condition was such as to preclude any advantage from operative measures. The fact that but 42.9 per cent. came under observation at a time when radical measures could be instituted, 29.9 per cent. at a time when palliative measures only could be employed, and 27.2 per cent. when neither method of possible relief was available indicates a woeful disregard of symptoms on the part of the patient and a failure on the part of the doctor to appreciate their significance, meaning that 57.2 per cent. of the series were denied the chance of relief which surgery offers.

The average age of 73 patients was 51.1 years, one occurring in the second decade, a male, age 17 years, with colloid carcinoma of the cecum, one in the third, a female, age 28, with carcinoma of the rectum, nine in the fourth, twenty-two in the fifth, seventeen in the sixth, sixteen in the seventh, and seven in the eighth, with the age not stated in four.

The growth was situated in the cecum in 16, in the ascending colon in 8, in the hepatic flexure in 7, in the transverse colon in 5, in the cecum and transverse colon in 1, in the splenic flexure in 3, in the descending colon in 1, in the sigmoid colon in 12, in the rectum alone in 23, and in the rectum and breast in 1. It will be noted that two patients are recorded as having multiple foci, one with carcinoma of the cecum and transverse colon, and one with carcinoma of the breast and rectum: together they present a fertile field for speculation as to whether or not they represent primary multiple foci. The conception that cancer is primarily local in origin, the secondary tumors developing as the result of metastatic transplantation, is so definitely fixed that one accepts the idea of multiple primary foci with a certain amount of reserve. Billroth formulated three conditions to be fulfilled by multiple cancers before acceptance of such as individual and independent tumors: 1. Histological differences of such degree as to preclude the interpretation of the two growths representing different stages of development. 2. Each growth must spring from its parent epithelium. 3. Each growth must have its own group of metastases. A fourth condition specified that if, following the removal of both cancers at one operation, the patient remains well,

*Read before Section on Surgery, Illinois State Medical Society, May 9, 1928.

the presumption that the two growths were independent of each other is strongly fortified, since had one represented a metastasis it would be reasonable to suppose the presence of others, a state of affairs incompatible with life. (Miller, Annals of Surgery, 1924.) Neither of these cases can meet all four requirements and yet present strongly presumptive evidence of being instances of primary multiple foci. One, a woman of 59, gave a history of rectal bleeding over a period of four months and of a tumor in the right breast of equal duration: the rectum showed an ulcerated induration in the posterior midline at the internal sphincter. The histology of the breast tumor was that of an adenocarcinoma and of the rectal tumor that of a colloid carcinoma. The breast was amputated, finding the axillary glands to show marked metastasis: the rectal tumor was removed and radium implanted in its bed. Death occurred at the end of one year from mediastinal involvement, at which time the rectum also showed recurrence. The second case, a man of 40, presented a tumor of the cecum and one of slightly smaller size in the center of the transverse colon. Search of the abdomen failing to reveal any evidence of metastasis the terminal ileum and the colon as far as the distal portion of the transverse colon were resected. The histology of the tumor in the cecum was that of adenocarcinoma and of the tumor in the transverse colon that of colloid carcinoma. While he is alive and well, but 8 months have elapsed since operation, too short a time for the fulfillment of the fourth condition.

Of the 53 patients with cancer of the colon 35 were males and 18 were females. The symptoms in this group have shown rather wide variation. Digestive disturbances have been the rule, in some instances constituting the sole complaint causing the patient to seek relief. Weakness and pallor were given by 2 as the only complaints. Weight loss in varying degree has been noted in more than 50 per cent. Diarrhea, with and without bloody stools, has been noted in lesions involving all parts of the colon, the diarrhea being more frequent when the cancer involved the right colon, the bloody stools more frequent when the left colon was the site of the growth. Constipation and obstipation were noted in but 3 of the 16 cecal growths, but was frequently present when the lesion was in the left half of the colon. Pain was the chief complaint given by 22: in the most of these this symptom was to be attributed to a partial obstruction. Obstruction was noted in 23, or 43.4 per cent., 6 being acute and 17 chronic: 30, or 56.6 per cent., presented no obstructive symptoms. While obstruction occurs with lesions in all parts of the colon it was more frequent in the left than in the right half: the explanation being in part found in the fluidity of the feces in the right colon, as compared with the solidity of the feces in the left colon. The anatomical arrangement of the angles favors the development of obstruction when these parts are the seat of growths. This is especially true of the splenic flexure, acute obstruction not infrequently being the first subjective symptom of a cancer at this point. Again the annular, scirrhus or fibrocarcinoma, producing marked constriction of the lumen of the bowel, has been in our series far more common in the left than in the right half of the colon. The cecal and ascending colon cancers have been either the soft medullary adenocarcinomas or of the colloid type, the former more frequent than the latter. The soft medullary adenocarcinomas occurring in the cecum and ascending colon produce rather large tumors, the early ulceration and infection of which lead to rather marked anemia, disturbance of digestion and weight loss, although they may be still limited to the bowel and readily operable. The blood picture has been somewhat significant, the lowest counts being found in involvement of the cecum and ascending colon, the lowest hemoglobin being 32, the highest 90, the average for the 24 cases being 65; the red cells for the same group varied from 3 to 5 million, the average being slightly under 4 million. The average hemoglobin in growths of the transverse colon was 82, splenic flexure 87, and in the sigmoid 75; the red cell average was respectively 4,330,000, 4,820,000, and 4,720,000.

The only perforation with abscess formation in the present series was noted in a medullary adenocarcinoma involving the cecum, a complication that may occur with any type of cancer and at all parts of the bowel. A palpable mass was present in 93 per cent. of the growths in the cecum and ascending colon, in 50 per cent.

of those in the hepatic flexure, in 100 per cent. in the transverse colon, in 33 per cent. in the splenic flexure, and 36 per cent. in the sigmoid. The masses originating in the ascending and descending colons are usually detected in the abdomen at points corresponding to the usual course of the bowel: those at the flexures are fairly constant in their location due to the fixation of the bowel at these points: the mobility of the transverse colon is such at times that masses originating therein may be felt at any part of the abdomen: cecal masses usually remain in right lower quadrant, but in the event of the tumor originating in a mobile cecum quite a range of motion and consequent location will be permitted.

X-ray examination has shown constantly two manifestations, filling defects and obstructions, upon neither of which alone can the diagnosis of cancer be made. Syphilis, tuberculosis, pericecal inflammations and diverticulitis may each and all at times give x-ray manifestations indistinguishable from those produced by cancer. The barium enema rather than the barium meal has been employed since the distension of the bowel wall by the former gives clearer definition both under the fluoroscope and on the film. Sigmoidoscopy will reveal growths too low to be shown by the x-ray and should constitute a step of the routine examination. The diagnosis has been reached by a correlation of the history with the physical, laboratory and x-ray findings.

Of the 32 patients with cancer of the cecum, ascending colon and hepatic flexure 16 were subjected to radical and 5 to palliative operations. The radical operation has consisted in the removal of the terminal six to eight inches of the ileum and the colon from the cecum to the junction of the proximal with the distal two-thirds of the transverse colon. In 1 additional patient whose cecum and transverse colon both contained tumors the resection was made to include the proximal two-thirds of the transverse colon. Resection of the right half of the colon for cancer in any part of its course was routinely selected for two reasons, first because it permitted safe and satisfactory removal of the ileocolic and right colic glands, and second because of the greater ease and safety in securing union between the small intestine and the colon as contrasted with resection of the colon in continuity. In the earlier cases closure of the ends of both colon and ileum with side to side anastomosis, suture method, was done, while in the later ones closure of the end of the colon with end to side anastomosis with Murphy button was employed. Both methods are satisfactory, but the latter has the advantage of being easier, simpler and quicker to carry out. There were three operative deaths, a percentage of 17.6; one on the fourth day from peritonitis; one from anuria on the ninth day in a 76 year old man in whom a portion of the ureter was removed on account of its incorporation in the tumor, the proximal end being ligated; and one on the twenty-first day from myocardial failure. Of the remaining fourteen, six are living and apparently well, 1 at 8 months, 1 at 1 year, 1 at 3, 1 at 5, 1 at 7, and 1 at 13 years after operation; 4 are known to be dead from recurrence, while the result in the remaining 4 is unknown.

In the 16 patients with cancer of the splenic flexure, transverse and descending colon, radical operation was done in 3 and palliative in 5. In the 3 radical operations there were two deaths, one on the third day from peritonitis and one on the thirtieth day from pulmonary abscess following septic infarct. The remaining patient is alive and well 7 years following operation. The operations consisted in resection of colon in continuity with Murphy button end to end anastomosis. Of the 12 patients with cancer of the sigmoid 5 had radical and 6 palliative operations. The radical operations consisted in resection with Murphy button end to end anastomosis. There were two operative deaths, one on the fifth and one on the sixth day from peritonitis. Of the remaining three, two are living, 5 and 8 years after operation, and one died from recurrence at the end of one year. Resection of the left half of the colon in continuity undoubtedly has a higher primary mortality than the Mickulicz operation and was selected because of the opportunity it affords for removing the mesocolic glands, believing that the added ultimate security given by such removal justifies the primary increased risk.

Of the 24 patients with cancer of the rectum 5 were males and 19 were females. Cancer of the rectum is usually noted more frequently in the male than in the female in the ratio of 4

to 1. In this small group the percentage is reversed. The symptoms were pain, tenesmus, constipation, bleeding and discharge with secondary disturbances of digestive function and, later, obstruction. The average duration of symptoms was 19 months, the shortest 2 months, and the longest 6 years. The blood picture varied with the stage of the disease and the amount of the bleeding. Little need be said about the diagnosis since the rectum is susceptible of both palpation and visual examination. It is only when one fails to employ these two measures that the lesion can be overlooked. The microscope may be required for the positive determination of malignancy, the eye and the finger being sufficient for the determination of the presence of tumor. In this series instances were found in which patients had been treated with ointments on the supposition that the symptoms were due to hemorrhoids, no examination of the rectum being made, the inevitable result being extension of the disease to the hopeless stage. One had been operated on for hemorrhoids only to find a continuation of her symptoms due to the overlooked cancer. Some excuse may be offered by a doctor for delay in recognizing cancer of the colon, none for failure to recognize cancer of the rectum: the one in a closed cavity may elude any but the most careful examination, the other sufficiently near the surface to be seen and felt will be detected if looked for. The so-called conservative operations for cancer of the rectum in which an attempt is made to retain the sphincter muscle have been disappointing in that recurrence almost invariably follows. Conservatism when dealing with malignancy conserves the disease not the patient. There are two potent objections to the old Kraske operation in that it does not afford access to all of the glands to which the rectal lymphatics pass and in that it leaves the artificial anus in a most inconvenient location. The two stage operation evolved by Coffey, in which a permanent colostomy is made, with removal of distal portion of sigmoid, mesosigmoid, rectum, perirectal fat and glands, appeals to one as being based on sound principles in that it removes the rectum and the cancer-bearing lymphatics that drain it. The first stage affords opportunity for accurately determining the operability, enabling one to avoid unnecessary resections. Of the 24 patients in this group 8 had radical operations, all of the the Coffey type, 7 two-stage and 1 one-stage: 8 had palliative colostomies and in 3 irradiation was employed. In the 8 radical operations there was 1 operative death, a mortality of 12.5 per cent., occurring from peritonitis 50 hours after the completion of the second-stage. Of the remaining 7 patients 4 are living and well at 1, 3, 4, and 11 years after operation: 2 died of recurrence at the end of 1 year and 1 is living with recurrence.

Operations done for cancer of the colon and rectum, as is true of all operations for cancer, must be complete in that the tissue involved and the tissue apt to be involved must be removed in all cases if a satisfactory percentage of cures is to be expected. This necessitates a knowledge of the characteristics of the growth, the methods of spread and the paths it takes as well as a thorough knowledge of the anatomy and physiology of the part involved. The blood supply and lymphatic distribution of the colon and rectum both necessitate and permit of radical removals, the loss of such part or parts being readily physiologically compensated. The operability of the growth, except in advanced cases can not be accurately forecasted until the incision is made: it will then be determined by the local attachments and visible spread of the growth, by lymphatic involvement and by distant metastases. Attachment to adjacent organs does not always contra-indicate radical removal if the attached and invaded organ is susceptible of removal. Such extension militates against the probability of permanent cure, but the prolongation of life and comfort thereby obtained makes the removal worth while. We have twice resected the ureter, once a loop of ileum and once the uterus without influencing the immediate result in but one case, mentioned above.

The enlargement of adjacent glands often presents a problem not soluble short of microscopic examination. The glands tributory to the right colic artery are commonly enlarged when the cecal growth is ulcerated and infected. Microscopic examination has shown both metastatic deposit and toxic lymphnoditis, it having been impossible in some instances to make the

distinction on other grounds. In view of such findings the presence of enlarged glands at this point should not deter one from doing a radical removal. While this is true to a lesser degree in cancers of the left colon and rectum, in our experience the hard, shotty enlargements indicative of metastatic deposit have been more frequently noted. Distant metastasis may occur in all parts of the abdomen and their presence should be excluded by careful search before determining upon resection: they are most frequently found as deposits in the liver and peritoneal transplants in the pelvis. In the presence of obstruction the two-stage operation is always safer. The absorbed toxins lower the resistance of the patient, the thickening and edema of the obstructed intestine interferes with its vitality and renders asepsis difficult to maintain, while the abdominal distension hampers both technique and manipulation. A colostomy or enterostomy for the immediate relief of symptoms with the radical operation when the condition of the patient permits will save lives that would be lost if the radical operation were attempted under such adverse conditions. An additional factor of safety now commonly employed in intestinal anastomosis and particularly applicable to colonic resections, consists of an enterostomy, anchoring a small tube or catheter in the bowel in such manner as will permit of a ready, spontaneous closure upon its removal. The relief of the distension and consequent pressure and tension on the suture line afforded by such a safety valve decreases the likelihood of necrosis and leakage with resultant abscess and general peritonitis.

A summary of the results in the 33 cases of radical operation shows an operative mortality of 8, or 24.2 per cent. Of the 25 operative recoveries, 13 are known to be living and well from 8 months to 13 years, 7 are dead of recurrence, 1 is living with recurrence and the result in 4 is unknown. The saving of life has been pitiably small when the total number of cases under observation is taken into consideration. It is to be hoped that the interest manifested today by both the profession and the laity in the cancer problem will ultimately bring colonic and rectal cancers under observation sufficiently early to make possible a better showing in the near future.

ARTIFICIAL PNEUMOTHORAX WITH HIGH INTRAPLEURAL PRESSURE IN PATIENTS WITH PLEURAL ADHESIONS*†

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Collapse therapy in the treatment of patients suffering from pulmonary tuberculosis who have extensive involvement of one lung with little or no activity in the other has proven its value through many years of practical application. The two types of operations most commonly employed today are extrapleural thoracoplasty and artificial pneumothorax. Many clinicians are inclined to favor the former; both operations have their advantage in certain cases, but before either procedure is begun a careful study of each individual case must be made. Most observers believe that artificial pneumothorax should be tried before attempting the more radical operation of extrapleural thoracoplasty.

It is not the purpose of this paper to take up a general discussion of the comparative values of extrapleural thoracoplasty and artificial pneumothorax, but rather to point out the advantages to be gained through the use of high intrapleural pressure in patients with pleural adhesions, and I shall therefore confine my remarks to this subject.

The presence of pleural adhesions is considered by many physicians as a contra-indication to continue with artificial pneumothorax. It is true in the cases with extensive adhesions, which allow only space enough for a small pocket of air, that artificial pneumothorax cannot be successful, but if only a relatively small portion of the lung is adherent a good result may be obtained by inducing pneumothorax under properly regulated methods.

Some authors state that in many instances adhesions will yield to low pressure if refills are given frequently, but the writer believes that the number of cases is essentially small. Many operators are not in accord with the use of high pressure for the reason that they believe there is great danger of rupturing the lung through

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increased tension on the adhesions with a resultant spontaneous pneumothorax and empyema. Such accidents are of course possible and no doubt might occur in cases where the pressure is increased too rapidly or careful study of the pathology of the lung is neglected. Exceedingly high pressure may be employed without injuring the lung, as has been shown by Ulrici,[1] who increased the pressure to as high as thirty cm. of water while Stivelman and Rosenblatt[2] employ a pressure as high as twenty to thirty mm. of mercury.

High intrapleural pressure is a procedure which is used after failure to produce a satisfactory collapse under low pressure and is, therefore, a treatment of necessity rather than of choice. It is impossible at the beginning of the treatment to judge the amount of collapse that may be obtained, and experience has shown that the procedure to be followed in a given case must be decided upon after partial collapse has been produced. With this in view the writer has adopted the following considerations under which to administer high pressure therapy:

Those patients in whom a complete collapse may be effected. In this type of case adhesions are usually encountered at the beginning of the treatment and although not extensive may require positive pressure to produce a satisfactory collapse.

Cases where high pressure must be used to maintain collapse. It has been noted in cases with a straight line collapse that there is a greater tendency for adhesions to form between the visceral pleura and the diaphragm. When this condition occurs if high pressure is not instituted the lung will gradually be pulled out and become adherent to the chest wall. High intrapleural pressure will as a rule prevent adhesions from extending higher along the chest wall than the costophrenic angle.

Those cases requiring aspiration in the presence of sero pneumothorax. If the fluid is clear and free from pus simple aspiration may be done and the fluid replaced with air, always closing each refill with a positive pressure, the extent of which must be judged by the type of adhesions present.

The following points in the management of patient's receiving high pressures are highly important to the success of the treatment.

Careful physical examination and roentgenological study of each case should be made before inducing pneumothorax. Fluoroscopic examination to determine the mobility of the diaphragm is highly important and should not be omitted from the routine examination.

In patients showing a cavity located near the periphera of the lung the pressure should be increased cautiously and frequent x-ray and fluoroscopic examinations should be made to determine the presence of adhesions which might produce tension on the surface of the lung located near the cavities.

If no pleural space can be found or only a small pocket of air can be produced the case should be referred for extrapleural thoracoplasty.

Manometer readings are very important and careful attention must be given to the degree of pressure produced at the close of each refill.

Refills should be given at least three times per week until sufficient pressure has been produced to maintain the desired amount of collapse. The periods between the refills may then be lengthened according to the amount of collapse sustained.

Most patients will complain of pain during the early part of the treatment and the operator must gauge the increase of pressure accordingly.

Practically every case will show a rise in temperature at the beginning of the treatment, the degree of which depends upon the extent of the lung pathology and the patient's reaction to the mechanical force exerted upon the lung.

Increased temperature and pain should not deter one from continuing the treatment, for if a satisfactory collapse can be obtained without development of complications the temperature and pain will subside, whereas, on the other hand, if the pressure is not increased the adhesions will pull the lung out, making it impossible to continue with the treatment.

Dyspnea is a symptom which is occasionally

1. Ulrici, H.: Kunstlicher Pneumothorax durch manuelle Lösung der flackenhaft verwachsenen Lunge, Deutsch, med. Wchnschr., 1918, 44, 1221.

2. Stivelman, B. P., and Rosenblatt, Jos.: Management of Pleural Effusion in the Course of Therapeutic Pneumothorax, Jour. Am. Med. Assn., 1921, 77, 12.

met with and in my opinion is a definite indication to withhold increase of pressure until the cause is determined and if possible eliminated. Shortness of breath may be produced by the formation of an excessive amount of fluid within the pleural space, cardiac disease, or spontaneous pneumothorax. In any event this symptom offers a poor prognosis and unless the dyspnea subsides the treatment is usually unsuccessful.

Seropneumothorax occurs in almost the same percentage of cases as is found in artificial pneumothorax with low pressure and is estimated at sixty per cent. of all cases receiving pneumothorax. The effect this complication may have on the prognosis depends entirely upon the extent of the effusion, whether or not it contains tubercle bacilli, and its tendency to become purulent.

Where reactivation or extension of the disease into the contra lateral lung takes place increase of pressure should be discontinued and the collapse maintained at this point, or if there is a rapid progression of the disease treatment must be discontinued altogether.

In conclusion I wish to say that no definite rule can be followed as to the time positive pressure should be instituted for the reason that the amount of pressure produced is dependent upon the condition of the lung as well as the patient's reaction to the treatment. When it is decided to increase the pressure it should be done gradually closing each refill from one to two points higher than the preceding one. Each patient included in the series from which this paper is written has received a positive pressure of at least 10 cm. of water.

The cases in which I have used high intrapleural pressure have responded satisfactorily to the treatment and in a few instances complete arrestment of the disease has been obtained. The prognosis in all of these cases was hopeless and sufficient collapse could not be obtained under low pressure to bring about improvement.

CONCLUSIONS

1. High intropleural pressure is of decided value in many cases presenting pleural adhesions that will not respond to pneumothorax with low pressure.

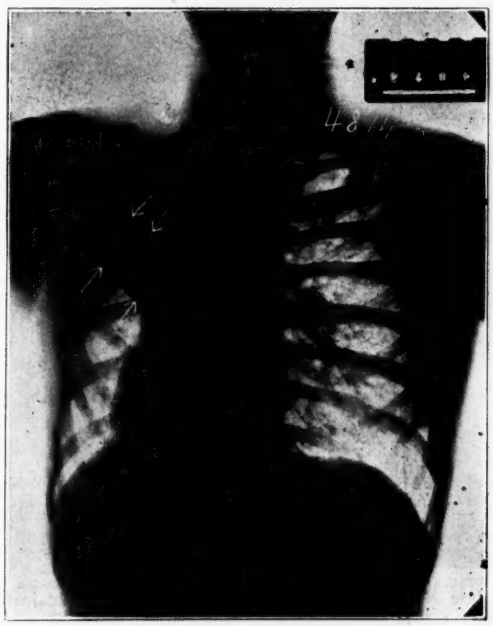
2. There is very little danger of tearing or rupturing the lung tissue if the case is carefully watched and the pressure increased gradually.

3. It should be tried in all cases where pleural adhesions are encountered during the course of pneumothorax.

4. The danger of injury to the lung will be greatly reduced if frequent fluoroscopic examinations are made during the course of treatment.

THE AMOUNT OF COLLAPSE OBTAINED IN CASES NOS. 1, 2 AND 3, IS ILLUSTRATED IN THE ACCOMPANYING PLATES

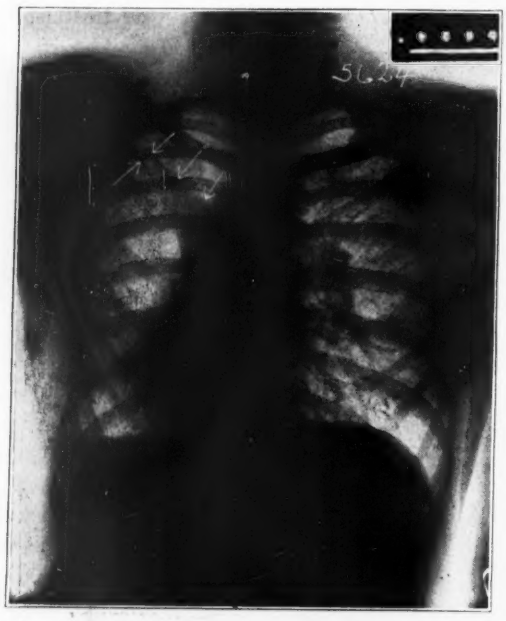
Case No. 1. B. C. Female, white. *Diagnosis*—far advanced active pulmonary tuberculosis, involving the entire left lung. *Prognosis*—hopeless. *Temperature*—prior to treatment ranged from 99 F. to 101 F. Extensive adhesions encountered preventing satisfactory collapse. The patient received moderately positive pressure of from 3 to 4 centimeters for four months. The temperature during the process of collapse ranged as high as 104 F.; after satisfactory collapse obtained became normal and remained normal. The *sputum* was positive on admission but following collapse became negative and remained negative. Prior to treatment expectorated 120 c.c. during 24 hours; after collapse obtained decreased to 4 c.c. in 24 hours.



Case No. 1; plate No. 1. Taken shortly after pneumothorax was begun and showed a large adhesion on the left side, which is indicated by the arrows.

Weight—prior to treatment 100 pounds, which receded during the early part of treatment to 90 pounds, but following satisfactory collapse a gain of 26 pounds was made.

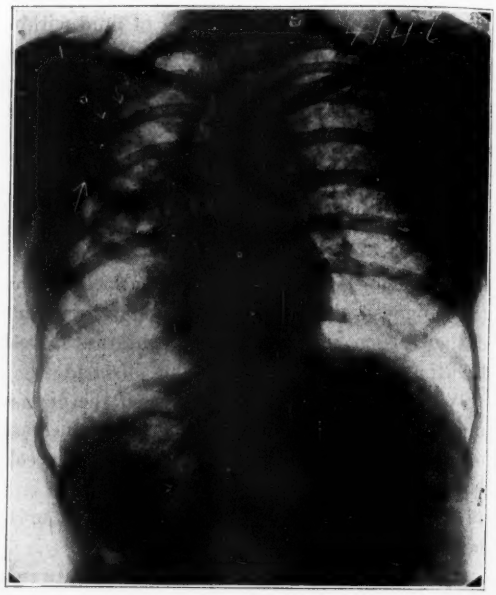
Case No. 2. J. S. Female, white. *Diagnosis*—far advanced active pulmonary tuberculosis, involving the entire right lung. *Prognosis*—very unfavorable. *Temperature*—prior to treatment ranged from 97 F. to 104 F. Following collapse, temperature became normal and remained normal. The *Sputum* prior to treatment was positive, Gaffke X; following collapse



Case No. 1; plate No. 2. Shows the results obtained by instituting high intrapleural pressure. The adhesion which was overcome by the gradually increased pressure is indicated by the arrows.

sputum was still positive, Gaffke II. Prior to treatment amount of sputum expectorated was 140 c.c. in 24 hours; following collapse amount of sputum expectorated was only 8 c.c. *Weight*—prior to treatment was 108 pounds; following collapse 133 pounds, making a total gain of 25 pounds. Pneumothorax with negative pressure for 9 months without effecting satisfactory collapse. Positive pressure to 10 centimeters for nine months producing satisfactory collapse.

Case No. 3. S. F. Female, white. *Diagnosis*—far advanced active pulmonary tuberculosis involving the upper and middle lobes of the right lung. *Prognosis*—very unfavorable. *Temperature*—before treatment 99 and 99.6. Became normal and remained normal after collapse. The



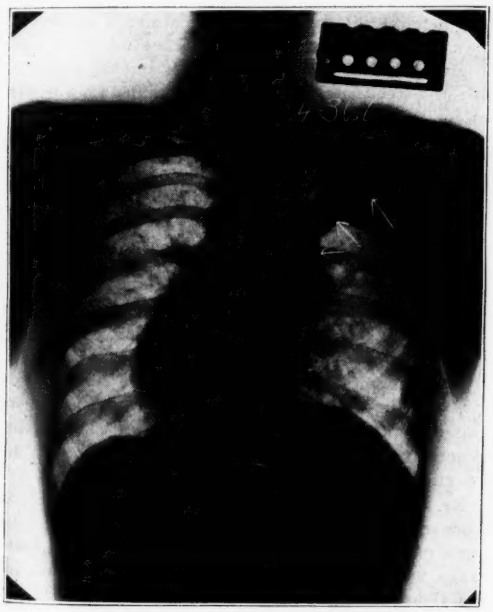
Case No. 2; plate No. 1. Shows an unusually large adhesion which is outlined by the arrows.

Case No. 2; plate No. 2. Shows the extent to which the adhesion was stretched. The borders of the adhesion are outlined by the arrows. The arrows numbered 2 show the borders of the adhesion; the arrows numbered 1 indicate the border of the lung.

Sputum on admission was positive; became negative following collapse and remained negative. On admission the patient *expectorated* 90 c.c. during twenty-four hours; following collapse no sputum. *Weight*—before treatment 90 pounds; during and following collapse gained weight to 125 pounds, making a total gain of 35 pounds. Negative pressure was used for seven months with unsatisfactory results. Positive pressure for six months which resulted in satisfactory collapse. Each refill closed with manometer reading of positive 10.

The following is a report of cases treated with high intrapleural pressure, and the improvement in clinical symptoms is conclusive evidence of the value of the procedure in patients with pleural adhesions.

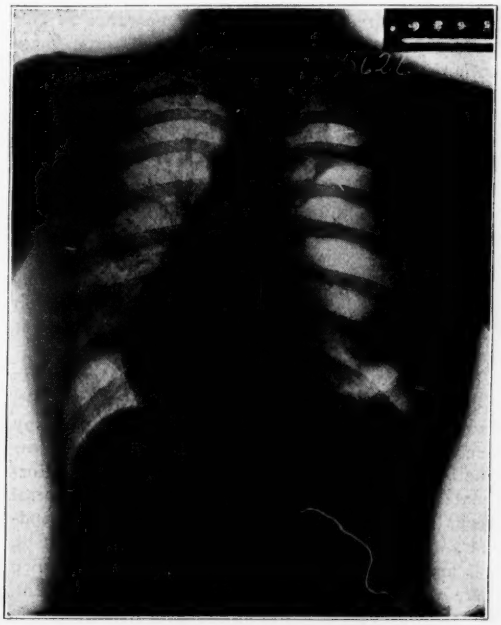
E. H. Male, white. *Diagnosis*—far advanced active pulmonary tuberculosis, involving the entire right lung. *Prognosis*—very unfavorable. *Temperature*—prior to treatment 101.6; after



Case No. 3; plate No. 1. Shows a large adhesion on the right side which is indicated by the arrows. This plate was taken after several inflations had been made.

satisfactory collapse obtained, became normal and remained normal. The *Sputum* prior to treatment was positive; after satisfactory collapse obtained became negative and remained negative. Received pneumothorax with negative pressure for several months. High pressure induced to maintain collapse.

H. F. Male, white. *Diagnosis*—far advanced active pulmonary tuberculosis, involving the entire left lung. *Prognosis*—hopeless. *Temperature*—prior to treatment was 100 F. to 103.6 F.; following collapse dropped to normal and re-



Case No. 3; plate No. 2. Shows the lung to be completely collapsed. The adhesion is outlined by the arrows.

mained normal. The *Sputum* on admission was positive but became negative following satisfactory collapse and remained negative. On admission, the patient expectorated 110 c.c.; following collapse sputum cleared up entirely. *Weight*—prior to treatment was 105 pounds; following collapse gained 20 pounds. Positive pressure of 10 centimeters of water was used in this case. Low pressure for six months; high pressure for nine months.

G. N. Male, white. Had received artificial pneumothorax which had been abandoned on account of an extensive adhesion. *Diagnosis*—far advanced active pulmonary tuberculosis, involving the entire left lung. *Prognosis*—unfavorable. *Temperature*—prior to treatment was 100 F.; after collapse obtained became normal and remained normal. The *Sputum* prior to treatment was negative and remained negative. Ex-

pectorated 130 c.c. in 24 hours, which was decreased to 5 c.c. in 24 hours. *Weight*—on admission, was 89 pounds. Gained 11 pounds under treatment, making his weight 100 pounds.

DISCUSSION

Dr. Trostler: I know practically nothing about pneumothorax as far as the therapy or its application is concerned; my knowledge of pneumothorax is almost entirely limited to its appearance in the fluoroscope and roentgenogram. We all know pneumothorax when we see it in the fil or in the fluoroscope.

I do not doubt but what this is a very valuable paper. That is as much as I am going to say about the paper.

We are very fortunate, however, I think, in having a man here who knows something about this subject and I am going to suggest as a substitute, not on the firing line because I would not want to substitute there if this were a scrap, but because this is a scientific subject, Dr. Alonzo C. Tenney, who I know will be able to give you something of benefit and value.

Dr. Alonzo C. Tenney, Chicago: This comes as a complete surprise. We were joking here and Dr. Trostler said, "I'm going to call on you to take my discussion up." I think he really doesn't know whether I know anything about it or not, but fortunately I had the privilege of spending several weeks down at Phoenix with my friend Dr. Goodyear, who handles a great many tuberculosis cases, and another physician who has a sanitarium down there whose name escapes me just at this moment, and their recommendations regarding pneumothorax were about as follows:

In any case where cavity formation has occurred, pneumothorax in their hands was highly desirable. The earlier the cavity was diagnosed, the more promptly pneumothorax was given, the greater the chances of fibrosis of the cavity and the arrest of the disease.

I began to wonder if part of the results obtained were not the result of the pneumothorax which could be applied at any time rather than to the climate. Coupled with the pneumothorax, of course, they had the advantages of the climate in Phoenix, and they also used a great deal of heliotherapy.

The men I talked with believed in positive pressure of from five to twenty, using a water manometer. They favored beginning with a very small positive pressure, about five first and then increasing to ten, and seldom going above that except in those cases where the inflammatory process had been arrested, the sputum was decreased, there was absence of dyspnea, and a rather firm mediastinum and indications to show that they were not taking much hazard in increasing the pressure.

The dangers which they warned against were: Too rapid compression of the lung with dyspnea, which in some cases was fatal; the laceration of freshly formed adhesions with hemorrhage into the pleural cavity (forming a hemothorax) and the massive collapse of the lung in case where there was a possibility of perforation around the mediastinum in any case where there were old ulcerated processes.

They attributed the increase in weight to two things: The clinical improvement of the patient (of course, when you produce the fibrosis and inhibit the invasion of the tubercular organism, and save a large amount of sputum which is a direct drain upon a person's vitality) there will be increased weight; and, secondly, to the decreased oxidation. With the forced feeding, complete rest and a part of the lung tissue collapsed, there is a decreased oxidation and they have to watch for development of acidosis and conditions which result from decreased oxidation.

They recommended the frequent small doses of nitrogen into the pleural cavity rather than massive doses at larger intervals. They begin a case with a small injection today and if dyspnea or any untoward symptoms—irregularity of the heart beat or marked tachycardia—develop, or sensation of shock, they would stop and then in twelve or twenty-four hours try it again and after the first readjustments which were necessary in the function of the heart and lungs were made, they would increase the quantity of nitrogen and consequently the pressure, and lengthen the interval between treatments so that in the course of two or three weeks they would be able to give treatments, compression treatments, at intervals of a week or ten days and sometimes they would go for a month between treatments.

Personally I have had no actual experience in the management of these cases. I am very happy to give you this second hand information for what it may be worth.

Dr. Cantrall, Bloomington: I'd like to ask the gentleman who just spoke if he doesn't think that the reason they have more dyspnea at the high elevation is because of the rarity of the air? It takes a good big lung to take care of a man.

Dr. Tenney: That is undoubtedly a fact.

Dr. Ronayne, Maywood: I'd like to ask the doctor, does he often have symptoms of shock due to massive collapse? What percentage of cases? His general results in complications following, such as infection of the pleural cavity.

Dr. Flinn, Decatur: I'd like to ask the doctor—some of his slides seem to have shown an involvement of both lungs—whether he collapsed when both lungs were involved or whether this was a fault in the slide that both lungs appeared to show infiltration?

Chairman Swanberg: I know there is one radiologist here who certainly knows something of the subject. That is Dr. Pettit.

Dr. R. T. Pettit, Ottawa: I was late getting back here and I did not hear Dr. Dunham's paper.

I do not know exactly what Dr. Dunham has said. I have been away for three months, and I do not know exactly what conclusions Dr. Dunham has come to in his work. It has been most interesting,

however, to me to watch the progress of his cases under the x-ray. I think it is of particular interest to us as radiologists because Dr. Dunham has used my services at every step to control his work and I know that he feels that the radiologic control in pneumothorax is the most important guide in the treatment.

These adhesions do stretch, the lung also re-expands and the amount of air that is put in the chest cavity, the number of treatments to be given, the interval, and so on, are all points that must be carefully controlled. The exact radiographic control of the patient, both by fluoroscopy and radiography, is extremely important.

Chairman Swanberg: This paper is open for general discussion. As Dr. Trostler has said the paper is one which I think the average radiologist would feel himself incompetent to discuss, however, it is certainly interesting work and it shows a phase of radiologic procedure and its value.

I would like to ask Dr. Dunham whether these results from pneumothorax treatment are caused by the actual rupture of the adhesions or are they dissolved? What makes them go away in the manner that they apparently do as shown by the roentgenograms?

Dr. Alonzo B. Tenney, Chicago: May I bring to your attention one very important thing and ask if you have had any experience? In hemorrhages from cavities, the pneumothorax is used as the treatment par excellence by people in the Southwest and I am sorry that Dr. Hayes isn't here today. He has had considerable experience in controlling pulmonary hemorrhage by positive pneumothorax pressure. Have you any information that you could give us on that?

Dr. Dunham: The question of whether, or not, the adhesions in cases receiving high pressure stretch or tear has been raised. I do not believe it is possible to determine definitely just what happens to the adhesions except as we can see them on the x-ray plates. In some instances it would seem as though they had actually torn loose, but in the majority of cases they appear to have stretched. It is my opinion that they are slowly stretched under the gradually increased pressure. In one of the cases shown here today it would appear as though the adhesions had actually been torn loose over a portion of the chest wall; however, remnants of the adhesions can be seen.

With regard to complications such as empyema or spontaneous pneumothorax occurring under the use of high pressure, I have never had either of these complications occur in the series of cases which I have shown here today. I have instituted high pressure in cases with pyopneumothorax who had been receiving pneumothorax for some time, with the object in view of preventing the formation of adhesions to the chest wall. In one or two instances a fistula has apparently developed which was indicated by the increased expectoration of purulent material. I do not believe, however, that the perforation of the lung in these cases can be attributed to the high pressure as it is my opinion that this condition had occurred before increased pressure was induced.

In the uncomplicated case presenting adhesions, I feel that if the pressure is increased very slowly that there is very little danger of rupturing the lung. I usually begin the increase of pressure by changing gradually from negative pressure to zero and gradually increasing this to the point where the maximum amount of collapse can be obtained without producing untoward symptoms.

The question has been raised here with regard to the appearance of the opposite lung in the cases which I have shown here today. It has been my experience that after one lung is collapsed that the other lung will usually show greater densities, which I believe can be accounted for from the fact that the congestion in the "good lung" has been increased and that there is also a compensatory change which takes place in the bronchi. Physical examination of these cases has not shown any evidence of active lung pathology in the contra-lateral lung.

I have often given pneumothorax to control severe pulmonary hemorrhage. There are cases, however, in which pneumothorax might be considered as contra-indicated. I refer to the type of case in which a high temperature develops with the onset of the hemorrhage. These cases do not seem to respond satisfactorily to collapse and I believe the reason can be attributed to the fact that a bronchopneumonia develops in the lung from which the hemorrhage is coming. I have attempted to control hemorrhage in two cases of this type and have been compelled to withdraw the air on account of the severe dyspnea which was produced. However, in the uncomplicated case I feel that the treatment is definitely indicated and carries a high percentage of successful results.

THE ABUSE OF CESAREAN SECTION*

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It is my first and most agreeable duty to express my profound appreciation of the honor conferred upon me by the invitation to address you on this occasion. The day on which one is welcomed into fellowship with the free and courageous souls of that "noble type who live not for self alone but the good of all" is a red-letter day in one's life, and to stand in this presence and witness the enthusiasm and devotion of men to an ideal is to become imbued with hope and faith, and to be made stronger and fresher to battle for the amelioration of suffering and the prolongation of human life.

*Read by invitation before Section on Surgery, Illinois State Medical Society, May 8, 1928.

Had the title not already been preempted, I should have called this paper *The Lost Art of Obstetrics.* Fortunately the great bulk of midwifery is normal in feature and in mechanism, but no branch of the medical art can supply complications and emergencies which, from their very nature and environment, are more thoroughly trying to the attendant than obstetrics. It is evident that he who performs an abdominal section has invaded the field of operative obstetrics. He no longer awaits his patient as did the old Roman midwife, ready to second the efforts of nature in carrying forward an inevitable physiological process. Instead he stands over her with a knife, and by doing violence to all these natural processes, feels confident of producing as good, if not a better result than could be reached by the old fashioned method to which a late president applied the new name of "watchful waiting."

Do not understand me to mean that I advocate a return to the obstetric methods which prevailed at the time the late lamented Julius Cesar made his entrance into the world. It is not of actual practice that I am thinking, so much as the attitude of mind at present prevailing. Everywhere we hear discussion of the failure of religion, of the lack of faith, the decline of spirituality, especially among our young people. We are told that the moral guides of our forefathers function no longer; in a word, that conscience is dead. Just so, it seems to me, has the "obstetric conscience" ceased to function.

The entire subject of Cesarean section has received an immense amount of attention within the past decade. The indices of medical literature have long sections devoted to it, and one hardly ever sees a programme given over to gynecologic or obstetric subjects that has not at least one mention of it. Just now it seems to have shouldered out "twilight sleep" as a topic of live interest, and in the delightfully free and outspoken discussions of the laity, holds its place with "birth control" and "companionate marriage" as conversational material for social gatherings of both sexes. We read that "the indications for Cesarean section have been greatly extended," usually followed by an imposing list of conditions in which the operation is now considered not only permissible but advisable. Worse than that, every practicing gynecologist and obstetrician sees almost daily women who have undergone this operation and been left by it, if not completely sterilized, with a generative apparatus so mutiliated that their efficiency as citizens charged with the duty of maintaining the population is lamentably reduced. Ten years ago Palmer Findley spoke of the manifold abuses which had at that time crept into obstetric practice, and gave it as his opinion that they were due to lack of training in modern obstetrics and "the temptation of notoriety from the performance of a spectacular operation." He went on to say that "belly-ripping has become a mania and its manifold ravages have invaded the realm of obstetrics to the extent of threatening to supplant many well tried and altogether reliable manual means of delivery through the natural passages. I have sometimes suspicioned that the surgeon is either unaware of the existence of a birth canal, or that he labors under the impression that the delivery of a child through the natural passages is a provision for those who do not have a competent surgeon at hand, that he views the natural passages as a makeshift exit to be used when the surgeon is otherwise engaged."

The first of these propositions remains perfectly true today,—want of proper obstetric training; or perhaps more exactly, failure to supplement with continued study and practice the very excellent training which is given in many medical schools, impels the practitioner, and all too frequently the specializing gynecologic surgeon, to decide upon a section because he is unable to cope with a perplexing situation in any other way. Except in the largest cities, midwifery is still largely in the hands of the general practitioner, but the growing tendency to fall back upon the specialist for anything that presents features varying in the slightest degree from the ordinary, is in evidence when the matter in hand is the physiologic function of child-bearing, quite as much as in pathologic conditions such as carcinoma or renal tuberculosis.

If a specialist is called in, he naturally is expected to "do something." If the practioner finds, or believes he has found, conditions in his obstetric patient which preclude delivery in the routine manner, he is likely to seek aid from a gynecologist, or still more frequently from a general surgeon. A consultant summoned in this

way is practically forced to recommend some more or less spectacular measure, and thus many Cesareans are performed more to satisfy the patient and her family that the outlay for the specialist's opinion was a justifiable expenditure, than because there was no other possible way of settling a puzzling situation.

One aspect of the question has received practically no consideration. During the past quarter century we have learned at high cost how dangerous is the Cesarean undertaken in the second stage of labor, after repeated vaginal examinations and attempts at manual delivery. This is emphasized in everything written and said about procedure. All teachers of obstetrics urge upon their pupils the necessity of thorough prenatal examination, the careful measurement of pelvic outlet, the determination of fetal position and all other data which may help when labor actually sets in. Especially is this urged when the patient is a primipara. As a consequence the young woman in her first pregnancy is palpated and measured and considered in a manner which is always unaccustomed, and in not a few instances decidedly terrifying. The matter is talked over with her in detail; it is found that the pelvic outlet is somewhat narrow perhaps; the presentation seems likely to be an inconvenient one; or the mother always had such long and difficult confinements and "Bessie is built exactly like me." If there is likelihood of "trouble" when labor begins, how much wiser to decide upon a Cesarean beforehand, and take none of the risks involved in having to do one without proper forewarning? The idea of being soothed to sleep with a nice anesthetic and wake up to find oneself mother of an adorable infant, with no more trouble than having one's appendix out—and who thinks anything of *that*, nowadays?—appeals very strongly to Bessie after all the awful things she has heard about normal labor; and under pressure from the patient and her family, the doctor does not have much trouble in finding a sufficient "indication." Thus the perfectly reasonable and proper precaution which every obstetrician is in duty bound to exercise, reacts on him like a boomerang. If there were any way of ascertaining the facts I feel reasonably certain it would appear that the great increase in Cesarean sections over deliveries by the natural passages is in private practice, among the better, that is, the more financially competent, class of patients. It has come to be regarded as an "easier" route to motherhood, and in the face of this conception its immediate dangers, to say nothing of its disastrous after-effects, are ignored or discounted.

For these reasons, the second proposition of Findley, that the surgeon seeks the notoriety of a spectacular operation, is not so impressive as it was ten years ago. A great many Cesareans are being done nowadays about which the operators say as little as possible, because they are desirous of avoiding professional censure. They only come to light when some enterprising statistician sets out to compile figures from various hospitals and "lumps in" the private cases with those done on the wards. And thus camouflaged no particular attention is directed toward them even then.

The mention of hospitals brings me to speak of another factor in the increase of surgical interference with labor that is not likely to be taken into consideration. This is the great number of relatively small hospitals which have been established all over the country since the end of the war. Everywhere this is hailed as an example of medical progress, and the advantages of having obstetric work done in these institutions is especially emphasized. Even such apparently unrelated situations as the utter disappearance of the old time "hired girl" have had their bearing in enhancing the popularity of "going to the hospital to have a baby." In communities supporting one or more small hospitals fully half the children born into well-to-do families first see the light in the private maternity ward. Now those hospitals are generally headed by a specializing surgeon, and the emphasis is always laid upon operative work. A hospital is regarded as "a place to do operations in." Seldom are specializing obstetricians attached to these smaller hospitals for the excellent reason that these gentlemen, while not wholly non-existent, are lamentably few and far between, and are likely to be found only in communities large enough to embrace a goodly number of parents who can pay big fees for each addition to the family. The parturient woman in the small general hospital thus inevitably comes under surgical rather than strictly obstetrical care, and the temptation to use operative measures, should labor present anything in the least out of the ordinary, is greatly ac-

centuated. This is one main reason why obstetrics is in danger of becoming a "lost art."

The situation in San Francisco as outlined by Spaulding a couple of years ago, is probably fairly typical of that in many of our larger cities. In his home town, he tells us, the obstetric patient is particularly well cared for by both specialists and general practitioners. Seventy-one per cent. are confined in hospitals, one-third of whom have practitioners who limit their work to obstetrics, or to obstetrics and gynecology, and comparatively few employ midwives. The general maternal mortality is less than half of one per cent. and the fetal mortality averages 6.5 per cent. In general practice very few Cesarean sections are performed, so far as available records show. In the teaching hospitals about one patient to forty or fifty deliveries is treated by Cesarean section, but in many of the private hospitals the recent records show that one in every eight or ten confinements are delivered by Cesarean section, mostly by obstetricians. If we can consider San Francisco representative of our greatest cities—and I deem it fair to do so—then the general surgeon presiding over the small hospital is only following the example set for him by the specializing obstetrician in larger institutions.

This review of the tendencies of both medical profession and laity toward increasing employment of a dangerous procedure, properly much restricted in its application, shows plainly that the need of education concerning this entire subject is extremely urgent. Social and economic conditions seem to operate relentlessly to urge young medical graduates away from specializing in obstetrics, or even accepting "confinement cases" as part of the routine of general practice, any longer than is absolutely necessary. "Too much night work; too poor pay for a lot of hard work," is the explanation regularly given. The man in this frame of mind can hardly be expected to possess the obstetric conscience developed to an advanced degree.

Let us consider for a moment what the whole sum of obstetric experience up to the present time has shown to be the absolute indication for doing an abdominal section upon a parturient woman. The "heirs to all the ages" in respect to this particular branch of human knowledge may very well be the men now presiding over large maternity services in various parts of the country; such men as Williams of Baltimore, Polak of New York, de Normandie of Boston and De Lee and Holmes of Chicago. Williams quite recently went on record "that insurmountable disproportion between the size of the head and the pelvis, and obstruction by tumor are practically the only indications concerning which there can be no dispute." In none of the cases which he was discussing "did the indications consist primarily of abnormal presentations . . . and the current tendency to resort to Cesarean section in the presence of abnormal presentations in normal women cannot be reprobated too strongly. . . . A breech presentation occurring in an elderly primipara with a rigid cervix and a normal pelvis may afford a justifiable indication, but such cases are very exceptional . . . radical interference is sometimes imperative in neglected transverse, face and brow presentations in women with normal pelves, but in such case it must be regarded as an emergency measure which is undertaken in order to prevent rupture of the uterus or the sacrifice of a good child, and must usually be followed by amputation of the uterus."

The views entertained by Polak closely correspond with those just cited: "Cesarean section is indicated in the patient in whom some definite pelvic obstruction exists, either as a result of actual contraction, or by the presence of tumors blocking the pelvis, which renders delivery *per vaginam* even of a dead or mutilated fetus either impossible, or so dangerous that abdominal delivery is attended by less risk to the mother. A contracted pelvis with the true conjugate of 6 or 6½ centimeters, or an immense child will give the absolute indication. This is admitted to be the only absolute indication for operation, and any operator who performs Cesarean for other reasons must be sure that the benefits which are to be expected from the operation both for the mother or the child, are sufficient to warrant the increased risk to the mother's life."

Five years ago de Normandie published and commented upon an investigation carried on in the state of Massachusetts regarding the prevalence of abdominal section in obstetric practice. It was found that in one year (1922)

1161 Cesareans had been performed in the state—one to every 78 births. Of the mothers, 102 died, the mortality being thus 8.8 per cent. Thirty died of sepsis and 23 of toxemia; embolism caused seven deaths, organic heart disease nine, and hemorrhage eight, while nine were attributed to acute dilatation of the stomach, and the remainder to various causes. "If the Cesarean is the simple operation it is claimed to be," queries de Normandie, "why do we obtain such high mortality?" His answer is that it is the "radicalism now rampant through the country that is the cause. . . . In certain communities all eclamptics, all previas, and many cardiacs are being delivered by Cesarean section." He goes on to say that in his own hospital service and private practice he has done Cesareans for every one of these indications, but that he nevertheless decries its employment except upon the most positive indications. Though nowhere in the numerous papers he has put forth on this subject does he once say that disproportion and obstruction of the birth canal are the only positive indications, his attitude, explained in details much too long to quote, leaves us in no doubt as to his conservative stand upon this question.

Holmes of Chicago seems to have been the first to cry in the wilderness against the indiscriminate use of abdominal section as a method of effecting delivery. As far back as 1905 he made a detailed study of the results of section done in cases of placenta previa, and deduced arguments, which so far as I am aware have never since been refuted, that the number of cases in which it was justifiable to open the abdomen were far fewer than those in which it was actually done. Since that time Holmes has gone on record at many meetings where obstetrical subjects were being discussed as holding the indications for Cesarean section within very restricted limits. "Gross cephalopelvic disproportion" he regards as the only unquestionable indication. But once a Cesarean has been done, he is firm in his conviction that the woman should never again be subjected to the "test of labor." He argues that "the danger of rupture of the uterine scar is one which may not lightly be decried; it is of small consequence when the section was dictated by absolute deformity for, perforce, the section must be repeated at the end of each succeeding pregnancy." All the more reason then, for doing the first Cesarean only after the most mature consideration, and—what seems to me of the very greatest importance—fully impressing upon the patient and her family the future penalties which the operative delivery will impose.

One of the best, as well as the most recent summaries of the Cesarean situation which has come to my attention, is that of George Clark Mosher of Kansas City, presented before the Detroit Obstetrical Society a year or more ago. The indications which he considers legitimate are: "A Baudelocque of less than 17 centimeters and a true conjugate of 6 centimeters or a tumor blocking the outlet is a positive indication." However, "seventy-five per cent. of all pelvic contractions allow delivery by the natural passages." Of the so-called relative indications, he says: "In eclampsia the indication for Cesarean section is limited to the cases of primipara with rigid, long-unyielding cervix, no improvement following six hours of conservative treatment. Placenta previa is most generally an indication for Voorhes bag induction, the exception being severe bleeding with no dilatation in a previa centralis."

It is clear that the obstetric profession generally is awake to the dangers of promiscuous Cesarean section, and that the more conservative and thoughtful element of the medical profession in general is actively seeking to remedy what is rapidly becoming a most deplorable situation. Yet the spokesman for the more liberal side continually bring very persuasive arguments to bear, and by reporting isolated cases where Cesarean section was *not* done and the results were disastrous, make out a very good case for the more radical wing. Thus Budd van Sweringen says in melancholy reminiscence: "I review some of my early experiences with regret in the light of satisfactory results with Cesarean section, for it is certainly not pleasant to present a mutilated dead infant to a badly damaged mother as the net result of your skill in obstetrics." This accoucheur believes that if the pelvic diameters are ample, "if gestation has been prolonged and the position of the presenting head such that proper and complete flexion can-

not be secured, section should be chosen if the environment is at all suitable." It would hardly be pertinent to comment upon the skill and obstetric judgment which any confrere has displayed in a given case, nor to judge of it by what he has incorporated in a single brief paper, yet I cannot but feel that impatience, and possibly lack of a sufficiently thorough grounding in the fundamentals of delivery technique, *according to natural methods,* may in some instances have been responsible for the distressing occurrences to which he so touchingly refers.

It is incumbent upon every man who teaches or practices obstetrics to make plain the dangers which attend even the most carefully and skillfully performed Cesarean, and to spread this gospel among his students and patients with the avowed intention of lessening, not only the actual number of these operations, but also the number of requests for their performance, either from obstetrician or patient. All the efforts of humanitarians failed to stop the docking of horses' tails in England, but when Queen Victoria declared herself opposed to the practice and had false tails attached to all her docked equines, long-tailed horses instantly became fashionable, and the cruel practice was abolished without delay. If we can make Cesarean section unfashionable, the death-knell of the unnecessary operation will have been sounded. As it is now, the great Dr. A. does one upon prominent Mrs. Smith and "gets through all right." Thereupon the less prominent Mrs. Jones beseeches her less great obstetric attendant Dr. B. to "do" one upon her, and Dr. B. yields to expediency and finds that sufficient "indications" exist.

Probably no abdominal procedure is any easier of performance than an uncomplicated hysterotomy. As Williams has said, "Anyone with two hands and a few instruments can do a Cesarean section; it frequently requires great intelligence *not* to do it. The delivery of a difficult subject in a manner satisfactory to all concerned, without resort to spectacular surgery carries with it a feeling of just pride in his specialty, indicating "that one is a skilled obstetrician and not a mere operator." I would not go on record as saying that one should never open the abdomen of an eclamptic, of a decompensated cardiac subject, nor in cases of placenta previa. In all of these section has many times turned defeat into triumph, when it seemed all hope was gone. These cases, however, are the exceptions which merely accentuate the general rule that section should be sharply limited in its indications and never undertaken without due consultation and carefully balancing all the factors favorable and otherwise.

Actually, there are comparatively few men who are completely fitted to perform this operation. Certainly not the ever-increasing number who so unthinkingly undertake it. The decision can only be reached by consultation with the man who has watched the patient during the gestation period, who knows her personal "equation" and is familiar with many features of the case which the hastily-summoned "specialist" cannot be expected to comprehend. Again, a man may be an excellent surgeon, but wholly unequipped as an obstetrician. He looks upon the fetus in the uterus as he would regard a cyst in the kidney; it must be gotten out immediately and the only way he knows is to cut it out. This may be good surgery, but only too often it is very poor obstetrics. The question as to whether or not a woman shall be subjected to the "test of labor" in a doubtful case, is often a matter which requires most exhaustive analysis. Here one's best judgment should be fortified by considering the possibility of section being later necessary, and palpation and rectal examination be substituted for exploration of the vagina.

In the category of complications in obstetrics the dystocias of labor stand out prominently and most surely represent to the practitioner a maximum test of heart, brain and nerve. A cool headed grasp of the local conditions obtaining in a given case supplies the indications toward successful treatment, and that appreciation, in turn, depends on an applicable knowledge of causes and varieties. Each case must be dealt with on its own merits.

The slogan given to the young doctor entering general or obstetric practice might very well be: In every case even slightly abnormal think of Cesarean section first, and do nothing to make it more hazardous later on; but *do* it last, when the best opinion backs up your conviction that it is necessary.

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THE RELATIONS WHICH SHOULD EXIST BETWEEN THE MEDICAL PROFESSION AND PUBLIC HEALTH OFFICIALS AND WORKERS*

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The subject which I have been asked to present for your consideration, holds obvious implications: The relations which exist between medical practitioners and public health officials and workers should be harmonious. If a vigorous statement to this effect could establish and maintain harmony further discussion would be unnecessary. If a vivid description of the state of affairs which I consider ideal could contribute to this end such a visionary exercise would now engage my attention. In the words of Trader Horn it's "Easy stuff to do with a little lapse of the imagination." But I presume I have been invited to discuss this subject here because it is a matter of common knowledgee that disharmony too often exists where harmony would be more desirable and profitable to all concerned and I have come to you in the spirit of the physician called upon to study symptoms, make a diagnosis and initiate a course of treatment. I approach my task with that degree of trepidation which its gravity demands.

Society is thoroughly aroused to the possibility of greater happiness and a larger usefulness through better health, both for the individual and the community and it is manifesting this new interest by unaccustomed if not unreasonable demands.

There is a demand for authoritative information on health subjects and a demand for the installation of health service both for the individual and the community. A general urge to meet these demands is felt by numerous and varied groups.

We have the local private agency supported by public subscriptions and administered by a governing board of public spirited citizens; this local board may and often does represent the interests and disburse the funds of private, state and national health agencies. There is the local official health agency which may or may not be under the supervision of the official state board of health; and may or may not be subject to the stresses of local political interference. Occasionally there are the local *Demonstrations* of some of the great welfare *foundations* which have been created to deal with special problems and entrusted with large sums of money with which to finance a single activity. Then we have the private practitioners of medicine, men whose professional oath of allegiance binds them to a course of unselfish devotion to the welfare of humanity and whose personal and family interests furnish an added incentive toward an effective contribution to the well being of their communities.

These men constitute the only group or crossection of society which is qualified by tradition and experience to provide sound leadership for the public health movement and to weld into harmonious endeavor the activities of diverse interests. What we find is not harmony and mutual understanding but distrust and mutual recrimination. The family doctor is said to be uncooperative and to require a great deal of "education" before he can be induced to relinquish the attitude of an obstructionist. The physician speaks openly and vigorously through his medical society and accuses the voluntary agency under lay leadership of grossly destructive tendencies in the health field.

This sententious attitude between the physician and health worker is particularly devastating to the official health agency. There is a mutual fear of interference, a tendency to obstruct on the one side and on the other a tendency to criticise the physician or to institute activities or measures from which the physician withholds his approval.

The physician is unable to lose sight of the fact that his livelihood depends upon the occurrence in the community of disease and accidents but no reputable physician desires to perpetuate the recurrence of these conditions in order that he may profit by attendance upon them in the role of medical advisor.

The layman is within his rights when he manifests an intelligent interest in the health and well being of himself, his family and his community, but he should not expect to assume the management of intricate forces involving a major branch of scientific medicine. This is a subject which he does not understand and for

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that reason he is unable to direct it with satisfaction to himself or safety to others.

Please do not misunderstand me. I am not criticising well meaning non-professional people. I am not criticising the medical profession. I recognize and approve the high purpose and genuine desire of both groups. What I am trying to say is that this is our work (the doctor's) and your work (the citizen's) and neither of us can repudiate it. What I am trying to get across to you doctors and through you to the lay people is that we must get together. We all wish to do the same thing. This work must be to do it. My challenge is not only to the laity but most emphatically and unequivocally to the medical profession. It is the doctor's business to keep the people well. When the doctor fails to keep the children of his friends and patrons well as far as he can, then he has failed to meet his highest obligation of citizenship. He has failed to do the thing the state has spent enormous sums to fit him to do. He, in other words, "has fallen down on his job."

Medical science has discovered preventives of certain diseases. Intelligent and well informed men are not going to let their children die of these infections because the local medical profession cannot agree on the method of procedure. Did you ever have one of your children "choke" to death with diphtheria? Have you ever seen your only son waste away and die of typhoid fever or tuberculosis? If you have not, you are not in a position to sympathize with the layman who gets impatient when the alleged ethics of the medical profession gets in the way of what he thinks will save his own or his neighbor's child. These are some of the problems of preventive medicine as an organized entity and as a branch of organized government.

How then can this situation be harmonized? The answer is, "through the exercise of intelligent leadership within the field of scientific medicine."

Preventive medicine (public health), is a specialty in the field of scientific medicine. The health agency which fails to recognize this tenet and to govern itself accordingly is courting failure in its most deeply cherished obligations. The medical society which has not yet awakened to this aspect of the situation is blind to its greatest opportunity for usefulness and deaf to the clear call of responsibility. The same can be said of individual physicians who make up the membership of organized medicine.

Some good men within the profession insist upon regarding preventive medicine as an outcast because it is frequently sponsored by non-scientific people and occasionally characterized by empirical methods.

In respect to this I would remind you that scientific medicine was itself cradled in empiricism while every specialty it has brought forth has passed through a longer or shorter period of disrepute before attaining professional recognition.

Witness the peddler of spectacles who gave place to the trained oculist, recall the crude surgery of American Battlefields and compare it with the miracles of surgical skill in the great European War. Could any of these benefits have come to mankind if modern medicine had not appropriated every discovery of bona fide science and applied it to the enhancement of human welfare?

Knowledge must not be enslaved either by ignorance or group prejudice. Let medical men manifest as keen an interest in prevention as the lay person shows, let him come forward with his scientific background for an understanding of the problems involved, including, if you please, the economic problems which affect him personally and then let him not shirk his responsibility for finding a sane and practical solution of these problems.

Dominance of the health field by organized medicine is an accomplished fact in a few states, which have legalized this claim on the part of the medical profession. It might be claimed that such dominance would hardly prove feasible in a majority of the states; this conclusion it seems to me is not warranted. Please note that it was by the exercise of intelligent leadership within a state medical association that this position of recognized authority was first achieved while the same art by which it was established has successfully maintained it throughout a period of fifty-five years. It is no less true that this remarkable heritage has fostered within the medical association of the state which initiated it a zeal for public service which it would be difficult indeed to overthrow. I am convinced that the intensive exercise of official leadership by the medical profession has in this instance been justified by results. In

my opinion medical groups will have no real difficulty in controlling medical and health matters so long as more scientific information and more vital interest in human welfare are to be found within the medical profession than outside it.

The medical profession should promote a better understanding of preventive medicine among its membership and a deeper interest in public welfare as affected by preventive measures. It should recognize the self evident truth in jurisprudence that the first concern of government is the welfare of the individual, the family and community. It should learn to face without trepidation the fact of the state's responsibility for conserving and promoting the happiness and physical well being of its citizens. The fear that public health work may eventually eliminate the doctor of medicine should itself be eliminated. Experience over a long period of years proves the opposite to be the case. Far from eliminating the private practitioner, successful public health work merely changes the character of the services required of him. It brings his patients to him earlier and in greater numbers, fewer bed patients, more office and clinic patients. The results are more satisfactory to all concerned, the patient benefits physically while the patient, his family and the physician all share in financial benefits.

I would like to suggest a few policies to which state medical associations, volunteer and governmental agencies may find it expedient to adhere in the administration of public health measures:

Boards of health should be composed of medical men.

Health officers should be medical men who are in sympathy with medical ethics; they should be approved if not chosen by the medical organization in the community in which work is to be undertaken.

Local activities should be outlined or approved, initiated in fact, by the medical organization.

The health officer should frequently consult his medical board; lacking that, the local medical men, and press into service the local medical society in the activities connected with the public health program.

Clinics should be established by the medical association; their administration may be delegated to local boards of health where these are to be found in active operation. In the latter instance it is expedient for the profession to direct the health officer to proceed with the work.

If clinic service is performed by the health officer or his associates it should be first officially approved by the local medical organization; it should be free and limited to those persons who are unable to employ a physician.

If clinic work is done by private physicians a fee may be authorized by the medical association which should have administrative control of the undertaking. The State Board of Health should furnish free biologic products for use in the public health program. The doctors should share in this also.

Every effort should be made to avoid pauperizing communities by offering free medical service to persons who should pay for it.

When voluntary health agencies wish to initiate local activities they should be advised to consult with the physicians and to be governed by the attitude of the local profession with regard to the expediency of the proposed measures.

All employees of official health agencies, especially public health nurses, should be thoroughly indoctrinated in the fundamental principles of medical ethics and in nursing ethics in its relation to the medical profession. They should at all times work in close cooperation with local practitioners of medicine and when found antagonizing or alienating their patients from them or criticising their work, they should be promptly eliminated from the official force.

In recognizing the medical profession as an authority, it may clarify our thinking to recall that there are several separate and distinct definitions of authority: 1. Legal or rightful power. 2. Government. 3. Power derived from opinion, respect or esteem; influence of character. 4. One that is claimed or appealed to, in support of opinions, actions, measures, etc.

If the medical group cannot qualify for the exercise of authority in its governmental aspect, it should strive to qualify in the domain of intellect and character. Authority exercised under an extra legal interpretation of the term is likely to be effective to the degree that it is gracious and acceptable to both official and non-official agencies.

All that is needed to ensure harmony between the medical profession and public health officials and workers is a better understanding of the purposes of each and plenty of character in action. This is a direct challenge to you gentlemen and a challenge to the professional organization which commands your allegiance.

DISCUSSION

Dr. Olin West, Chicago: I am sorry that Dr. Welch's paper could not have been heard by the entire membership of the Illinois State Medical Society and by every man and woman engaged in public health work in the state.

Dr. Welch is entitled by reason of training and accomplishment, to hold and to express opinions. Inasmuch as I have known him directly or indirectly all my life, having been born in his native state in which he practiced medicine for many years before he became its health officer, I find real pleasure in having been privileged to hear this paper, and having the opportunity to talk about some of the things he mentioned, and perhaps one or two that he did not mention. His opinions are entitled to the consideration of every man and woman who is interested in any manner whatsoever in scientific medicine or in public health, which is nothing more or less than part of the field of scientific medicine.

There are certain fundamental things it seems that we all might recognize and keep persistently in mind. One is that the medical profession cannot do all the work that it is called upon to do, and will always be called upon to do, in the curative field of medicine and actively direct and maintain the operation of the necessary public health agencies. Official health agencies have been established by law. The need for these agencies was very definitely proven before they were established and a need for the maintenance and continuance of these agencies become more and more apparent as the information about the prevention of disease is developed by those who work in the various fields of medicine. What I mean to say is, that we have state boards of health and county boards of health and city health departments. They have proven their value and we are going to have them as long as society exists and disease persists. The work of administration of the health department is a complex work which demands the active, persistent, everlasting study and effort of men who can devote themselves absolutely to it.

Public health work as we usually refer to it is largely education which is a continuing process that will go on as long as time continues, and on into eternity. And I doubt if the process will ever be finished, even to the very extreme limits of eternity itself.

We have in addition to legally organized health agencies a number of others—in my judgment, entirely too many—including some great foundations, endowed through the munificence of a single individual or a group of individuals, that have had come into their hands immense sums of money that is meant to be spent and it is going to be spent. Some of these foundations have worked well and wisely, but some, in my judgment, have not pursued a very wise policy.

Some of them have adopted and have persistently held to the policy of upholding and improving and developing official health agencies. That, to my mind, is what all of them ought to do.

In addition we have a number of volunteer agencies that are supported in one way or another, and all very active in one way or another. Some of them have done good work but for some of them I am unable to find any very definite, worth while reason or excuse for existence. Thus a complex situation has been created.

The medical profession, trained to do the curative work of medicine until within very late years, has rather suddenly come into possession of a tremendous amount of knowledge about disease, its causation and its prevention. It is unreasonable, in my judgment, to expect a profession trained along one line, having practiced along that particular line for generations, to completely assimilate all of this marvelous amount of new knowledge that has suddenly been dumped before it, to change its entire system of practice and to adapt itself in its entirety for the immediate application in the large fields that have been so suddenly developed, of all that has been learned, and to do all that is to be done in the active management of necessary health agencies.

There is no doubt but that there is much misunderstanding on the part of the profession itself, on the part of those engaged specifically in public health work, and on the part of the public with respect to what the relations between the physician and the public health workers in the general program of public health administration should be.

There is no doubt either but that there ought to be a definite understanding arrived at and some specific plan of cooperation entered into. I believe that this is going to require before it can ever be realized, the abolishment of some agencies that are dipping into the field but I do not know how that is to be brought about.

I remember very well some of the problems that used to come up in my experience as a health officer, and how many times I, as a legally constituted official of the state, had programs decided upon after deliberate study and hard work and consultation with everybody concerned, interfered with by voluntary agencies who seemed to want to occupy the place of first importance and to assume leadership whether it belonged to them or whether it did not.

The first thing, I believe, that is necessary to bring about a definite understanding and get to work on a cooperative program that will really get somewhere, is to assign to the place of first importance in the public health field itself the legally established public health agencies. The volunteer organizations that want to come into the jurisdiction of a legally established agency ought to be made to agree to conform

to the programs of that agency which have been arrived at after due consideration of the interests of all concerned, including the practitioner of medicine, as a factor of prime importance in any public health program.

Public health agencies which are controlled and directed by laymen are rather prone to accept and are very impatient to act on the basis of every supposed discovery in medicine, especially preventive medicine. They are also disposed at times, to ignore or to misapply what has been definitely established as scientific facts. Dr. Welsh had something to say about that. My conviction is that it is greatly to the credit of the medical profession that they have been slow to adopt measures that have been put before them as finalities—as finished, perfected methods—but have not yet stood the tests of time and practical usage. I think some of our public health workers have been prone to rush their programs on the basis of supposed discoveries which may eventually pan out, but which may not. Many times they have had to retrace their steps by reason of having made that mistake. Right there is to be found the explanation for some of the disaffection on the part of a conservative medical profession that has seen many myths exploded and wanting to be convinced, has not rushed in on the basis of a so-called discovery that has not been proven.

Sometimes our health agencies have been a little too ambitious in their claims. Not long ago I saw a layman exhibit some charts which showed that in a particular field in which his organization had been active, there had been a rather pronounced reduction in the death rate from tuberculosis, and his disposition was to claim credit for that reduction. I do not know whether his organization and its work had a thing in the world to do with it, because I know that in other places where no intensive work was undertaken, where nothing was done, exactly the same results were shown in the tuberculosis death rate. Then, too, I have known of instances where much fuss has been made over results shown on paper but not to be found in the field.

The medical profession has gone along for all of these many years and it has played an important part in the prevention of disease, even though no fuss has been made about it. There is mighty little that an honest and capable physician can do in his every day practice that does not have bearing and effect on the prevention of disease and on the reduction of prevalent disease. It is just a little irksome to have some layman who knows very little about the art or the science of medicine, to come in and claim credit absolutely and entire for developments that he may not have had anything whatever to do with, when the medical profession has been working along persistently and earnestly with a view always toward the prevention of disease.

The medical profession has a very definite and a very grave responsibility in this matter of public health. There are those things which doctors get for being doctors, and this responsibility with respect to public health is one of those things, and they cannot escape it. I, therefore, find myself in entire agreement with Dr. Welch when he say that boards of health, whether state or local, should have representatives of the medical profession in their membership. The responsibility rests upon the medical profession, to see to it that physicians are put in the places where scientific medicine can serve helpfully for the common good. Every board of education in this country ought to have one or more physicians on it. I have seen efforts made to bring that about, that fail and then stop on the basis of one failure. That is a mighty poor effort to discharge a responsibility. It is poor sportsmanship. Do not quit on the basis of one failure. If they beat you one time, go after them again, and if they beat you a second time, keep after them and finally the thing will be won.

Within the last two years, the American Medical Association through its board of trustees, has called two conferences on public health. They have been little more than "gab-fests" in which Dr. Welch participated, and some of those who have attended those conferences have felt very little has been accomplished. But we have the open record of crimination and recrimination and we have given every fellow an opportunity just to open his mouth and say what he pleased. We have let the public health men tell the medical profession to its face exactly what they think, and the doctor tell the lay public health worker exactly what he thinks, and we have gotten out of the way now all of this small talk and all of this fuss and all of this "gab." Next we are going to try to use that conference to begin the development of a program that will get everybody to work together in an understanding way.

It would be fine if we could find a jumping-off place, with a plan agreeable to everybody concerned, and then jump off together and try to do something in cooperative fashion. But it is not as easy as it sounds. If we try to develop some plan to deal with diphtheria, here is a heart association, and here is a lung association, and here is a foot association, and here is some other kind of an association, and it is "Oh, we haven't any interest in that," "We are not going to have anything to do with that." It might be that if we could get rid of some of this multitude of organizations and get right down to brass tacks on the basis of needed organization, it might not be so difficult to find that jumping-off place and start a real program of cooperation between the medical profession and the official health agency, and the volunteer health agency that has any real excuse for existence.

There is, in my mind, no good reason why the medical profession should not be permitted to assume its place in the public health field and there is no good reason why the leadership of the medical profession should not be accepted, nor why there should not be earnest and persistent and continued cooperation toward the great end of making life safer and more efficient.

TRANSPLANTATION OF THE HAMSTRING TENDONS FORWARD TO THE PATELLA FOR PARALYSIS OF THE QUADRICEPS EXTENSOR

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There is considerable divergence of opinion among orthopedic surgeons as to the results of the transplantation of the hamstring tendons forward to the patella. In the *British Medical Journal* of April 9, 1921, H. A. T. Fairbank

Fig. 1. A and B. A, Extension; B, Flexion

says he has never yet seen a biceps, which has been inserted into the patella, produce voluntary extension at the knee joint by contracting alone at the will of the patient. He has seen it contract with the flexors and interfere with the action of the flexors, but he has not seen it produce extension of the knee joint at the will of the patient. However, as early as 1902, Painter reported (*Boston Medical and Surgical Journal*, Vol. 148, p. 381) the transplantation of the biceps into a slit in the quadriceps tendon at the upper border of the patella. He also divided the inferior portion of the tensor fascia femoris from its attachment and reflected it over the superior portion, making its combined insertion close to that of the transplanted biceps. His results were satisfactory to both his patient and himself.

It is the purpose of this paper to show that transplantation of the biceps, together with the semitendinosus, forward to the patella, when properly done, is one of the most satisfactory procedures we have in orthopedic surgery. The semimembranosus remains to flex the knee and to act as the antagonist of the transplanted muscles. Not one, but many of our own cases have obtained excellent and powerful extension of the knee and can extend the knee at will.

Wherever possible, it is wise to transplant these two muscles around the opposite sides of the knee instead of using only the biceps. When used alone the biceps may sometimes tend to produce knock-knee. Albee (Surg. Clinics of North America, April, 1925) states that there is practically no tendency to produce knock-knee in adults, but there may be some in children. One of my patients who had only the long head of the biceps transplanted at the age of six years, has walked twelve years since operation without a perceptible knock-knee. My own experience has been that the knock-knee and outward rotation of the tibia and fibula occurred before the transplantation rather than afterward. An osteotomy or other corrective measure at the time of the tendon transplantation is frequently necessary.

Lange (*Surg. Gyn. and Obst.*, April, 1927) states that it is his experience that transplantation of the hamstring is quite satisfactory, even though the action of the transplanted muscle is slight and the majority of patients are able to walk even without an apparatus, providing they have no flail knee joint.

The mistake often made is in not freeing the two flexors upward a sufficient distance from the femur and also in leaving the short head of the biceps attached to the common biceps tendon instead of stripping it off and leaving it in its original position. By freeing the muscles well up and bringing them forward on a long slant we keep as nearly as possible the normal line of action, and the muscles do not have to undergo so much readjustment to meet the new conditions of work. If they are freed up only enough to allow them to reach the patella by being brought around at an acute angle, the line of

action is altered too much and the muscles cannot adapt themselves to their new work; consequently they lose some of their power.

The blood supply of the tendon is very important. So long as the muscle attached to the tendon has its blood supply intact the tendon will not suffer. On the other hand, if the blood supply to a muscle, or to any part of it, is destroyed, death of that muscle or a part of it is the result, and only connective tissue elements remain. In order to contract, a muscle must have a blood supply just as an internal combustion engine must have its supply of gasoline and air.

The motor, vascular and sensory nerve fibers to the transplanted muscle must be safeguarded. The nerve fibers and the muscle fibers must be put at rest for a considerable period of time after a tenoplastic operation.

A skillful surgeon can successfully transplant a tendon, but the successful restoration of function, the aim of every tenoplastic operation, depends upon the will power and intelligence of the patient.

The process of re-education calls for patience, untiring effort and a keen mind on the part of the patient. It is only after months of repeated efforts that results begin to come.

In our clinic we have adopted a technic as follows:

With the patient lying face down or on the side, a long incision is made in the middle of the back of the thigh extending from almost the tuberosity of the ischium down to a point below the level of the head of the tibia. It is a mistake to attempt this operation through a short incision. The skin and superficial fascia are dissected up and pulled aside. On the outer side of the popliteal space the biceps muscle is fully exposed from its insertion upward seven or eight inches. At the upper end of the incision the long head of the biceps can be easily encircled with the thumb and index finger and isolated down to where it is continuous with the fibers of the short head. The common tendon is broad and thin, but with care it can readily be divided into two halves. It is very important to cut the tendon off at its insertion, taking with it some periosteum and bone from the head of the fibula. In freeing the tendon, care must be exercised to avoid injury to the external popliteal nerve. A strong chromic catgut suture is woven into the tendon, starting at the distal end and weaving it in and out, going upward about two inches, and then going down again and out through the end of the tendon. This gives a firm grip of the tendon and also makes it a little rounder and firmer without producing constriction.

On the inner side we prefer the semitendinosus as a transplant because of its long tendon. This muscle with its sheath intact, can easily be freed from the semimembranosus and cut off low down at its insertion into the tibia. The sheath is drawn back and a chromic catgut suture woven into the tendon as was done in the biceps.

The patient is now rolled on the back and an incision made from the lower end of the patella, straight upward about four inches. The skin and superficial fascia are dissected back. A heavy curved pedicle forceps is thrust downward and backward through the subcutaneous fat, emerging in the posterior wound. The forceps is opened and shut in its passage in order to tear a wide tunnel through the subcutaneous fat. The tunnel must be made on a long slant upward so that the muscle can pull in as nearly its normal line of action as possible without having to go around a sharp angle. The chromic catgut is now pulled through to the patella. The same thing is done on the inner side of the thigh and the semitendinosus is brought out to the patella. In cases without flexion deformity the tendons are long enough to reach the patella without a plastic elongation.

A longitudinal cut is now made in the periosteum of the patella at the outer side and a groove made in the bone to receive the biceps. The two strands of chromic catgut threaded into strong, curved spear-pointed needles, are passed into the slit, in opposite directions forward and outward, through bone, periosteum and fascia and when these sutures are drawn taut the end of the tendon lies in this groove in the patella. The sutures are then tied over the tip of the tendon. In the older patients holes are drilled in the patella for the anchor sutures. This gives a firm insertion into the bone. Besides this anchor suture the tendon is further fixed by several interrupted chromic catgut sutures to the vastus externus and the quadriceps tendon. This gives excellent, firm fixation.

The semitendinosus is fastened into the inner side of the patella, to the vastus internus and quadriceps tendon in the same manner as the biceps. The tendon sheath is pulled down along the tendon as far as it will go and secured by a stitch or two. Preserving the sheath lessens the possibility of the formation of adhesions, although adhesions that sometimes form in the case of the biceps (where no sheath exists), do no great harm.

Fig. 2. A and B. A, Extension; B, Flexion

The tension under which these tendons are sutured into the patella has a decided bearing upon the end results. If under too great a tension the muscle becomes tired and loses its contractile ability, consequently it undergoes degeneration. On the other hand, if not taut enough a certain amount of the leverage is lost. One can only judge the proper amount of tension by one's sense of touch, and the ability to do this increases with experience.

After six weeks immobilization in a plaster-of-paris cast, with leg fully extended, active motions and muscle training are begun. Of these, muscle training is by far the most important.

This paper is based upon an experience of thirty-five cases and the following representative ones are presented:

Stewart MacN. Born in 1907. Had an attack of poliomyelitis the last week in September, 1912. There remained a paralysis of the muscles of the left side of the back, the quadriceps extensor and anterior tibial on the left side and of the anterior tibial on the right. On July 9, 1915. the long head of the biceps and the semitendinosus of the left leg were transplanted forward and inserted into grooves in the patella. Lange's silk was used in this case. He now has strong, but not quite complete extension of the knee joint due to the fact that the tendons were not freed upward enough and pull at too acute an angle. The biceps is functioning better than the semitendinosus. (Fig. 1.)

Alice MacN. (sister of Stewart) was born in July, 1909. Had an attack of poliomyelitis, sometime during October, 1912. She had a generalized paralysis and was unable to stand for one year. At time of operation she had complete paralysis of the right leg, paralysis of the left quadriceps extensor and some weakness of the semitendinosus and semimembranosus. On July 9, 1915, the long head of the biceps alone was transplanted forward into the patella and anchored with Lange silk. She now has strong and complete extension of the knee joint. There is no tendency toward knock-knee. (Fig. 2.)

Angelo L. Born in 1909. Had an attack of poliomyelitis in 1911. When he presented himself in the clinic in 1920 he had complete paralysis of the quadriceps extensor and anterior tibial on the right side. On October 6, 1920, the long head of the biceps, together with the semitendinosus was transplanted forward on a long slant and anchored into grooves in the patella with chromic catgut sutures. Unfortunately a few days later some sepsis developed, necessitating keeping the leg at rest for a much longer period than the usual six weeks. He also failed to return to the clinic for several months, but when last seen both the biceps and semitendinosus were functioning equally well. But at that time he was unable to extend the knee completely and could maintain the extension only a very short time. The action at the knee joint had improved rapidly with regular muscle training. There had also been a marked improvement in his walking. (Fig. 3.)

George N. Age 17½ years. Had an attack of poliomyelitis at the age of five years. Examination showed considerable scoliosis, right thigh contracted, right quadriceps paralyzed, hamstrings strong, foot in varo-cavus, slight power in anterior tibial, toe extensors good, planter fascia very tight.

Left leg. Anterior tibial paralyzed. Peroneus tertius good, toe extensors weak and foot in varo-cavus. May 19, 1920, the biceps and semitendinosus were transplanted forward to the patella. When seen March 29, 1921, the hamstring transplantation was considered a failure as no voluntary contraction could be determined. He was encouraged to make further effort to establish voluntary extension, at the knee, with the result that on June 17, 1921, there was complete and powerful extension at the knee joint.

Mary W. Aged 13 years. Had an attack of poliomyelitis when four years old. On admission to hospital January 28, 1926, there was complete paralysis of the left leg. There was a marked knock-knee, and paralysis of the quadriceps extensor on the right.

On January 30, 1926, the long head of the biceps was transplanted forward into the patella. At the same time the nnock-knee was corrected by osteotomy. This child now has a straight leg and the transplanted muscle is a powerful extensor.

Maurice P. Aged 10 years. Had an attack of

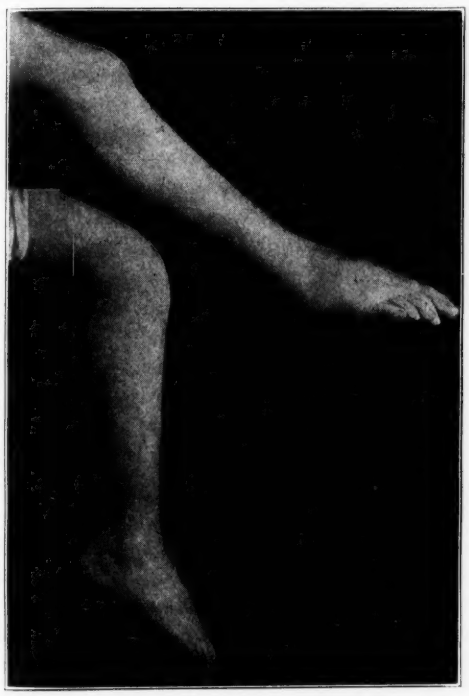

Fig. 3. A and B. A, Extension; B, Flexion

poliomyelitis when 14 months old. He had complete paralysis of the left quadriceps extensor. The biceps was of normal strength but there was weakness of the semitendinosus and semimembranosus. July 7, 1926, the long head of the biceps was transplanted into the patella. This child has excellent function from the transplanted muscle.

Walter W. Aged 13 years. Had poliomyelitis. The muscles of both legs, and the right quadriceps extensor remained paralyzed. The left foot was stabilized three years ago. February 3, 1927, the long head of the right biceps was transplanted into the patella. A stabilizing operation was done on the right foot at the same time. The transplanted muscle is acting, and gaining in strength but cannot yet extend the leg. This patient now walks without a brace for the first time since the attack.

Several patients could not be located.

One who had a hamstring transplantation about five years ago was last seen about one year ago. At that time no voluntary power in the transplanted muscles could be demonstrated but walking was improved.

Another returned to his home in Oklahoma eight weeks after operation, two weeks after removal of the cast. At that time the transplanted muscles were acting, but not powerfully. There was marked improvement in his walking. He has not been heard from since.

Another patient has not been seen since the day the cast was removed in June, 1921. He cannot be located and no comments can be made upon the results.

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ARTHRITIS*

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Mr. President and Gentlemen: The very general prevalence and the extensive crippling of its subjects leading to so much suffering, incapacity and economic loss would appear as sufficient reason for opening a discussion on chronic arthritis.

The conception of this as a "chronic rheumatism" would appear to be still rather generally present in the minds of a no inconsiderable number of the Medical Profession, while the adoption of the term by the laity has been almost universal.

Out of the chaos created by the earlier inclusion of most forms of chronic arthritis under this caption, there has gradually been evolved a by no means as yet satisfactory classification, but for practical purposes, a very useful grouping into various more or less distinct forms of the disease. It is with particular reference to the so-called nonspecific types of chronic arthritis that I wish to confine my remarks.

A reference to much of the literature reveals the fact that in the majority of instances an attempt, in some cases almost masterly, has been made to correlate both as to their etiology, pathology and clinical manifestations two quite distinct types of disease. To Garrod and the Goldthwaite possibly belongs the credit for drawing our attention to the difference, although isolated instances had been earlier referred to, but no attempt at systematizing these differences had been made.

*Read before the Chicago Medical Society, April 18, 1928.

No doubt in a moderate percentage of cases these two types pursue their course *pari passu* in the same patient and frequently in the same joints. From this association it will be evident why such rather incongruous clinical and pathological pictures have been presented even up to the present time by many writers. In this way confusion has arisen in the past and still obscures the clinical picture, and what is of more importance, often brings discredit to the physician and his method of management, each apparently owning a very different pathology and etiology and each in turn requiring different management.

The first, and by far the most generally met with, I will introduce as osteo-arthritis or hypertrophic arthritis. Its anatomical features are evidenced in the changes in the bones leading to the production of osteophytes, a very moderate absorption of cartilage, moderate changes in the soft tissues about the joints with very little tendency to effusion into the joint except with the more acute exacerbations. Enlargement of the joints is the result of osteophytic production and swelling of the peri-articular structures, but striking deformity is not a feature, as it is so often in the type to be mentioned later.

It is met with most often between early adult and mid-life and would appear to own an etiology in focal infections as suggested by Bannatyne and others in the 90's from their occasional finding of organisms in the lesions and as demonstrated pretty conclusively by Rosenow under the divining hand of your own Billings. This early work of Rosenow would appear to have been amply corroborated by many other workers.

The organism most commonly responsible would appear to be some member of the streptococcus group and most frequently the streptococcus viridans. Rarely other organisms, probably most frequently the gonococcus, would appear to furnish the bacterial agency. A supposedly hereditary occurrence is best explained by the transmission from parents the subject of mouth infections, by means of fingers, osculation, etc., of organisms having a special affinity or tropism for joint tissues. Curiously enough, the white races are decidedly more prone to the condition than are the dark skinned races despite the fact that focal infection is not uncommon in them.

Remissions and exacerbations in the clinical course are noted with or without any notable associated changes in the focal infection with which the joint trouble is connected. Occasionally the onset may be very abrupt, presenting quite moderate fever ranging around 102 or 103 with decidedly acute changes in joint, so much so that rheumatic fever is suggested. More usually the onset is sub-acute, the patient with or without some exposure or a slight sore throat, complaining of soreness or stiffness in one or more joints with or without slight swelling but rarely redness. A sense of weakness is commonly noted. After a few days or possibly a more protracted period during which the pain slightly subsides in some joints to appear in others and then gradually and more or less completely disappears to recur sooner or later in the same or different joints. Evidence of its ravages gradually accrue until the activities of the patient are more or less seriously hampered by pain and limitation of movement. In the later phases this limitation of movement may be more or less continuous due to the development of the exostoses about the margins of the joint surfaces. During exacerbations the swelling of the peri-articular tissue and of the synovial fringes further hampers movement.

The involvement may be apparently monarticular as in the shoulder, knee or hip, but usually careful investigation will reveal the presence of small osteophytes, scrunching, pain on movement or limitation of movement in other joints.

The joints most often involved are the knee, shoulder and those of the hands. In the latter the formation of Heberden's nodes in the distal interphalangeal joints is rather characteristic. Quite frequently the sacro-iliac joints are attacked, less often others such as those of the vertebral column.

It is well to remember that injury, even though slight, may bring into relief a more or less latent osteo-arthritis. On several occasions I have seen this a basis of litigation. An intercurrent infection may likewise fan a smouldering process into activity.

I wish to note the not infrequent occurrence of a chronic endocarditis. I have never noted any evidence of an acute type. The process involves the mitral valve usually and is evidenced by a presystolic roughening of the first sound.

On no occasions have I seen evidence of advanced mitral obstruction following, such as met with when the endocarditis arises in the course of rheumatic fever.

Concurrently with the evolution of the joint problem one finds associated various other manifestations etiologically interrelated. At times these are the prominent feature of the patient's problem. The fibrositis involving the peri-arcicular structures shows a predilection for the connective tissue of the muscle sheaths, the intermuscular planes and the neural sheaths. In the former instance various painful conditions described as "muscular rheumatism" are noted. Chiefly among these one finds torticollis and lumbago, less often the intercostal and abdominal muscles. In the case of the intercostals a pleurisy may be suspected while with an involvement of the abdominal muscles the patient has been credited with an acute appendicitis and a surgical enterprise launched. I have noted the condition in the ocular and laryngeal muscles as well as various others.

A teno synovitis or bursitis is not of uncommon occurrence.

Fibrositis when it attacks the nerves rarely damages the neuraxons. Usually it is the perineural sheath, and while there may be pain and tenderness along the course of the nerve, the sensory and trophic evidences of changes in the fibrils are absent except in very severe or protracted cases. Neural involvement, while it may be met with in any part, is most likely to occur in some portion of the brachial plexus or probably more frequently in the sciatic nerve. With brachial involvement an arthritis of the shoulder joint is frequently combined while with a sciatica we have associated an arthritis of the hip or more usually of the sacro-iliac joints. This sacro-iliac involvement appears to comprise the majority of the so-called "sacro-iliac sub luxutions" for the relief of which so much ingenunity has been expended in the production of various mechanical contrivances.

A panniculitis at times of rather extensive dimensions but more usually limited to the formation of small subcutaneous nodules may occur.

"Joint mice" would appear to evidence this type of arthritis, arising as the result of separation of one or more of the synovial fringes in which marked fibrous or even cartilaginous changes have taken place.

The earlier the recognition and the sooner treatment is inaugurated, the better the outlook and the more likely is there to be restoration to the normal. Management begins with a careful search by every useful means for sources of focal infection in the teeth, tonsils, accessory nasal sinuses, gall bladder, appendix, pelvis of the kidney, pelvic adnexa, etc. I am not convinced that the gastro-intestinal tract in itself is an important factor in the production of arthritis. It is well to remember that infected areas which have a more or less free drainage on to a surface are less liable to be causative agents than when conditions are otherwise. This viewpoint would place the onus most often on dental and tonsillar infections and clinical experience would amply confirm this.

But how often does opinion differ on the presence or absence of evidence of infection. In the case of the tonsils, my criterion has been the presence of redness, swelling or edema of the anterior tonsillar pillar. The size of the tonsil appears to have no significance as to the presence of infection or as to its virulence. Many place great stress on their ability to squeeze pus out of the crypts. These crypts have a free avenue of drainage to the surface and examination of the material removed from them shows it to be comprised mostly of desquamated cells, fatty detritus and food particles with possibly a few leucocytes. Tonsils, no matter how small, but exhibiting evidences of infection should be completely dissected out. The infection is deep and "topping" them by the older or even the more recent methods does not ensure their complete removal. Usually very little objection is forthcoming when tonsillectomy is suggested.

How entirely different is the situation when one incriminates the teeth, more particularly if no local discomfort has been experienced. The patient's argument, that they "have never had a sore throat or any trouble with their teeth," may be countered by the reply that they may have a toothache in their elbow or a sore throat in their knee. No doubt most people wish to retain their teeth owing to the difficulty often experienced in getting a properly fitting denture. One chief reason for this I shall mention a little later.

I am afraid that a not inconsiderable number of our dental practitioners are responsible for our difficulties in having these sources of infection adequately taken care of. Many of these dentists may be classed as "conscientious objectors," but I fear many of them are woefully ignorant of the first principles of bone pathology. Unfortunately the x-ray does not always disclose the morbid process, but careful clinical observation I am convinced will give a wonderfully accurate idea of the changes present. These findings may be carefully correlated with the x-ray pictures.

Following the extraction of teeth showing apical abscesses which may be extremely minute though wonderfully potent to produce much trouble, as a rule, there is a prompt remission of the arthritic demonstration provided no other sources are existent. Occasionally one sees a rather sharp exacerbation in the affected joints following the extraction of such teeth. This would appear to be evidence of a direct association.

With a diffused alveolitis, evidenced on inspection by more or less swelling, redness or edema of the gum over the alveolar process about the roots of the teeth and in the x-ray picture by the absorption of lime salts about the roots of the teeth or more diffusedly through the bone, the case is different. The process begins as a marginal gingivitis spreading to the alveolus and causing absorption of the gum and interdental bone. The teeth gradually become loosened by a more or less general rarefying process and often an extensive septic condition results. This latter is designated as pyorrhea. Usually its earlier manifestations are quite unrecognized or are sadly neglected. The less virulent infections give rise to an osteoplastic process about the teeth.

The rarefying osteitis presents a much more difficult problem than does an abscess. The pyogenic membrane of the abscess acts more or less as a protecting agent to the tissues about it, while with a rarefying osteitis no such protection is offered, the bone spaces being more or less open and offering a more ready avenue for absorption. This type of infection requires a much more prolonged period to recover, but the patient expects immediate results. Goadby says that 2 or 5 years are necessary for repair and I can quite confirm his statement. In the meantime the patient, looking for immediate relief and not getting it, becomes disgruntled and starts out in search of other methods of cure vaunted to affect more prompt results. Ultimately the credit is bestowed on whatever particular treatment he may be following when his amelioration finally takes places. It is wise to warn patients with this rarefying process at work, that they must not expect improvement before some months.

Another serious factor looms large in procrastinating in the removal of teeth in these cases. The longer they are retained the greater the absorption of the alveolar process, so that when they are eventually extracted and a denture is necessary there is no sufficient process remaining to retain it and the patient is in for an uncomfortable and unhappy future, derogatory epithets being generously bestowed on the ill-fitting denture and the physician and dentist concerned in the removal of the originals.

Pulpless teeth are foreign bodies and almost without exception virulent organisms can be cultured from the root apices on extraction.

Personally, I give no quarter to teeth showing clinical or x-ray evidence of pathology. Their early removal is one of the very best measures in preventive medicine.

Involvement of the nasal accessory sinuses occupies, in my experience, a definitely less prominent position as a causative agency, but their thorough examination should never be neglected. The history of nasal discharge, repeated "head colds" or a tenderness over the antra with or without the presence of nasal obstruction demands that the x-ray be called to our assistance.

Much less frequently other sources of infection may be found.

In all cases they must be carefully sought for and if at all possible completely eradicated, as it is quite impossible to single out any one focus as definitely and solely the source of the trouble.

While the search for these various possible sources of infection is being pursued and during the often protracted period of waiting following their removal, the discomfort of the joint problem demands amelioration. Many are the methods and equally numerous the so-called specifics which have come and gone, all of them having been found sadly wanting. My reliance, at pres-

ent, reposes in a very few of the many drugs vaunted. Salicylates in some form or other appear to give most relief. They should be pushed to the point of relief or until their administration becomes intolerable. In most instances I have found their virtue greatly enhanced by antipyrin administered coincidently with the salicylates or in the intervals between the doses. Rarely I have had the characteristic erythematous antipyrin rash occur and I have never seen anything of its reputed depressing effects. I have tried out most of the more recently marketed salicylic acid compounds, but I cannot say that they have any advantage over the older preparations except in possibly producing less gastric disturbance. but I am thoroughly convinced of their inferiority as judged by the relief of pain. By times one may have to resort to codeine which can be combined with the aforementioned remedies. Rarely is morphia required.

Locally dry heat applied in some of the many forms available gives most relief. I am not convinced that many of the local applications recommended are in any notable measure efficient.

Vaccine therapy, either stock or autogenous, applied either with a specific objective or as an agent in the production of "protein shock," in general has little appeal, as I cannot say after an extended trial that I have seen any results which would warrant any optimism on my part. I have, of late, employed these agents rather infrequently and can say with Miller, that "the results do not excite great enthusiasm." Nevertheless the occasional case presents itself in which this form of therapy may prove beneficial.

The matter of diet has received no little attention. I am not aware that I have observed any notable influence on the course of this type of arthritis accruing from the use of this or that type of food ingestion. I am convinced that meat is only not detrimental but beneficial to these patients. The elimination of proteins and various other articles of food, as even yet so frequently advocated, should not be tolerated. The patient should receive a generous amount of food without limitation of his protein and under no circumstance should he be further punished by dietetic restriction. The general nutrition should be maintained as near par as possible.

In evaluating the influence of any of these measures, one must in all instances take cognizance of the naturally variable course of the arthritic problem, its remission and exacerbations of varying duration and the effect of the patient's general health and the prevailing climatic conditions.

The second or atrophic type of arthritis, rightfully termed arthritis deformans, appears to have little or no etiologic or pathologic relation to the one just passed in review. Promptly distinguishing it from the hypertrophic type it would appear that so far it has not been possible to produce it experimentally and microorganisms are of doubtful etiologic relationship.

It bears some clinical analogy to Still's disease as seen in infancy. It is met with most often in women, its incidence being about three times as frequent in women as in men. The majority of cases begin in early adult life, but its onset may be delayed until a later period. Progressiveness and deformity characterize its course. The anatomical changes distinctly differ from those of the hypertrophic type. There is marked thickening of the soft peri-articular structures, swelling of the synovia, definite increase of the synovial fluid and rarefaction of the ends of the bones entering into the articulation. The cartilage is rapidly disintegrated and extensive destruction of the ends of the bones follows. Sooner or later the loss of the articular surface together with the presence of muscular spasm is productive of more or less complete dislocation followed by ultimate joint fixation. The swellings in the joints are characteristically spindle shaped and the muscular atrophy proximal to the joints further accentuates this appearance. The bony development about the joint is usually the result of ossification in the peri-articular tissues or the adjacent muscle rather than of osteophytic origin and is responsible for the marked later fixation of the joint. True bony union is rarely seen, this being more commonly the sequel of a definitely septic arthritis. The smaller joints of the hands and feet are usually first attacked. Later the wrists, ankles, knees and practically all of the joints in the body including those of the vertebral column and the temporo-maxillary articulation may be involved. Even in the early phases the joint changes are almost characteristic. The lesions are usually symmetric. The metacarpo-phalangeal joints

are flexed, the proximal interphalangeal joints are hyper-extended and the fingers show ulnar deviation. The fusiform swelling is early in evidence and in the proximal interphalangeal joints is known as Haygarth's nodes. The skin in general, but particularly about the joints, is glossy with a tendency to be sweaty. The lymph nodes generally are slightly enlarged and a mild splenomegaly usually noted. Fever is frequently present. An increased cardiac rate is of almost constant occurrence and this is accentuated during the febrile periods. This increasing pulse rate is of value even in early cases in differentiating the two forms of arthritis, a desideratum to be desired from the standpoint of treatment. Gastro-intestinal manifestations are frequently observed.

I might note the occasional occurrence of loss of vision due to a gradually progressing destructive process in the eye. Two such instances have come under my notice.

Periods of activity alternate with more or less quiescent intervals. Occasionally, at a comparatively early period, the progress may be permanently stayed but more usually it pursues a merciless course, ultimately leaving the patient with the joints immovably fixed in most inconvenient positions.

Bacterial agents would appear to have little or no place in the direct causation of this atrophic form. The very constant presence of a lowered carbohydrate tolerance or, as I have noted in a goodly number of cases, a glycosuria or even a definite diabetes may be only a manifestation of the underlying problem, but the fact remains that if the arthritis is early recognized and dietetic measures adopted to take care of this metabolic defect there is coincident remission of the joint manifestations and not infrequently permanent relief so long as the patient maintains the diet. Needless to say, the very pathology of the disease precludes a restitution to normal if its progress is at all advanced. I am strongly convinced that the dietetic management offers us the most promising outlook. Restriction or even elimination of the carbohydrate intake is of prime importance. The earlier the condition is recognized, the sooner the regimen is adopted and the closer it is lived up to the more likely are we to obtain a remission. It should be unnecessary to say that in more advanced cases little benefit can be anticipated.

Not infrequently evidences of a coincident hypertrophic arthritis are forthcoming and the focal infections so constantly associated with its etiology should be taken care of. In any instance these foci which, under all circumstances are prejudicial to the general health, should be removed.

Most arthritic patients are decidedly more comfortable in a dry warm climate and the benefits to be derived from this are always to be considered, though often the discomfort incident to travel and the inconveniences of abode may more than counterbalance any benefit derived.

As in the hypertrophic type heat applied in some form or other is often comforting. I think the relief from its application is even more striking here. Local applications appear to produce only a psychic effect.

With serious deformity threatening, means should be employed to prevent if possible its further development. Judicious massage and splinting may accomplish something. Forceable correction by fracture or an osteotomy may on occasion be advisable but should be employed only if some definite end is to be gained. I have seen marked improvement take place in a joint proximal to an accidental fracture close to the joint.

Medicinal measures similar to those mentioned in the management of the hypertrophic type find a rather less useful field here.

Fortunately in a considerable percentage of cases as the later phases are reached and the patient becomes exhausted by long suffering, there is often a notable spontaneous relief from the pain. This is brought about by the complete fixation of the joints. When the patient is seen late in the course, a prospect that this fixation will ultimately occur is but poor consolation to hold out. Unfortunately the ultimate is all too frequently reached.

Early recognition and the prompt adoption of a proper dietetic regimen appear to offer the best outlook in this otherwise relentlessly progressive disease.

I trust, gentlemen, that this rather brief review of this problem will elicit a discussion which will be beneficial to each of us and that the sug-

gestions proffered will bring more comfort, if not permanent relief to the wretched sufferers from chronic arthritis.

IMPORTANT CONSIDERATIONS AND COMMON MISTAKES IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS*

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In the diagnosis of pulmonary tuberculosis a number of essential factors must be kept in mind. In many instances the diagnosis can be made without difficulty, but in many other instances to arrive at the correct conclusion it is necessary to utilize all of our skill and judgment, and only after an extensive study can we arrive at the correct conclusion, and it is in the early case that the correct diagnosis is most difficult. In these cases the diagnosis is most necessary because usually the early case can be cured. In the advanced case cure is difficult and many times hopeless.

What are the essential factors in making a diagnosis?

They are: 1. History; 2. Constitutional Symptoms (chiefly fever and rapid pulse); 3. Sputum Examination; 4. Physical Examination; 5. X-ray; 6. Tuberculin.

History: The history is extremely important. In fact, it is just as important to take a careful history in diseases of the lungs as it is in gastric ulcer, cancer of the bowel, or stone in the kidney. There are, however, special things in the history that are especially important in pulmonary tuberculosis. The history of exposure is very important, particularly exposure in childhood. Exposure in adult life, it is true, is important, particularly the relationship of husband and wife, but during recent years we have been paying less attention to adult exposure than formerly. For example, even in the relationship of husband and wife, careful statistical study has shown that the incidence of tuberculosis acquired in adult life is quite rare, but a little greater than found under the ordinary conditions of life.

Exposure in childhood, however, is extremely important. We now believe that most tuberculosis is acquired in early childhood from a tuberculous father or mother; that this tuberculosis may lie quiescent for a number of years until early adult life and then, due to some overstrain, such as study, hard work, dissipation, or childbirth, the quiescent tuberculosis acquired in childhood flares up and causes an active adult tuberculosis of the lungs.

Most important is lassitude or "tired feeling," the inability to get through a day's work, "lack of pep" or easy exhaustion. This is an early sign of absorption of tubercle toxins.

Another important symptom is loss of weight, and it is particularly important to note how much loss of weight and in what length of time. A loss of weight of a few pounds in several years is of little significance, but a loss of five per cent. of the body weight in six months or less is of great significance.

Digestive disturbances, so-called indigestion, loss of appetite or gastric distress and all the other symptoms that are usually associated with so-called "nervous dyspepsia." These stomach symptoms taken together with loss of weight and lack of energy are quite significant even before the symptoms referable to the lungs assert themselves. Another constitutional symptom usually associated with pulmonary tuberculosis is night sweats, but this symptom is indicative of a more profound intoxication and usually appears later and is indicative of a more advanced condition.

Symptoms referable to respiration are as follows:

Cough, expectoration, shortness of breath, pleurisy, and pulmonary hemorrhage.

"Pleurisy, either dry or wet, is according to our present day knowledge indicative of pulmonary tuberculosis." This statement, I fear, is a bit too broad. All cases of pleurisy are by no means tuberculous and I fear that this idea has incorrectly crept into our text-books. It can be stated more correctly, I believe, "pleurisy, dry or wet, should be considered suspicious of tuberculosis unless it can be definitely traced to some other cause such as pneumonia, bronchopneumonia or influenza."

Pleurisy *per se* can be caused by other organisms than the tubercle bacillus. We may truth-

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fully say a case of pleurisy not associated with an acute respiratory infection should be considered as tuberculous until proven otherwise.

Hemorrhage from the lungs, if it is a real hemorrhage, is practically always due to tuberculosis. It may come early or late in the disease, and if it comes early is a warning signal of great value.

What constitutes a true pulmonary hemorrhage?

A spoonful or more of bright blood coughed up or expectorated suddenly. The mere streaking of sputum with flakes or specks of blood cannot always be considered as blood coming from the lung. Hemorrhage from the stomach can usually be eliminated by being associated with vomitus and a definite history of stomach ulcer.

Cough and expectoration, the two most common symptoms associated with pulmonary tuberculosis, I have placed last because many cases of pulmonary tuberculosis, even though advanced, never have a cough, and while most cases of open active tuberculosis have expectoration, many cases do not, and there is nothing characteristic about the expectoration of sputum. While they are important, their importance has been over-emphasized.

Constitutional Symptoms. The two constitutional symptoms of importance that have not been mentioned under history are (a) fever; (b) increase in pulse rate.

Fever is an extremely important symptom because it indicates a toxin absorption. The fever associated with pulmonary tuberculosis is usually slight, more often below 100° than above, and accompanied by a pulse rate out of proportion to the degree of temperature. A single observation of the temperature and pulse in a clinic or a doctor's office is of little significance, particularly in children. A slight rise in temperature of a few tenths of a degree, or an increase in the pulse rate may be caused by excitement of coming to the doctor's office or to the clinic or to the stuffiness of a waiting room. When I speak of temperature and pulse observations I mean observation of the temperature and pulse several times during the day—morning, afternoon and evening—with the patient at rest and free from excitement over a period of several days. This can best be done in the patient's home by one trained in making the observation (a visiting nurse) or better still in the hospital with the patient under absolute control.

Under these conditions a constantly sub-normal temperature in the morning with a rise of even a few tenths of a degree above normal in the afternoon accompanied by a rise in the pulse rate of ten beats or more above the normal is extremely significant.

Sputum Examination. "We may be excused for not getting a careful temperature record on our patients; we may even be excused for not taking a careful history and we may very readily be excused for not hearing fine rales on physical examination, but there is no excuse for neglecting to examine the sputum." (Lawrason Brown.) Laboratories are available everywhere, and if your patient cannot pay for a sputum examination the specimen may be sent to the State Board of Health, where it is examined free of charge.

If we find the tubercle bacilli in the sputum, the diagnosis is absolutely conclusive and positive. The finding of tubercle bacilli in the sputum is the one positive thing in the diagnosis of pulmonary tuberculosis. The failure to find the tubercle bacilli, however, is of little or no importance. A positive sputum report is absolutely positive; a negative report merely means that the tubercle bacilli were not found in the small particle of sputum examined, and it is not safe for us to say that the sputum is negative until a number of examinations, certainly four or five, have been made.

Many patients will say that they do not expectorate, but if the sputum container is placed in their hands and the doctor insists upon coughing and expectorating, something can be usually procured for examination, and even though the expectoration is slight and apparently insignificant, frequently on examination the tubercle bacilli are found. Get a specimen and examine it!

Physical Signs. The next important thing in the diagnosis of tuberclosis is the physical examination. It goes without saying that in making a physical examination the patient must be stripped to the waist and the bell of the stethoscope placed in contact with the patient's skin. No examination, under any circumstances, can be made satisfactorily otherwise.

Of the various procedures in making a phys-

ical examination it is perhaps well to point out the relative merits of these different procedures. They are (a) Inspection; (b) Palpation; (c) Percussion; (d) Auscultation.

Of the four methods in common use, in my opinion, the two most important are inspection and auscultation. Palpation, in my hands at least, has been of little value. We can, it is true, by palpation, make out a spasm or atrophy of muscle, but it is well to remember that these are merely suggestive signs. Percussion is much the same. Dullness and flatness can be determined, it is true, but it has been my experience in checking the findings by percussion with the x-ray plates to find how little I have found on percussion. Inspection and auscultation, however, are of great value. On inspection the general appearance of the chest, the musculature and posture are valuable, but of greater value is the drooping of the shoulder, the elevation of the shoulder and lagging on inspiration. In auscultation the character of the breath sounds, whether sharp or faint, whether bronchial, broncho-vesicular or vesicular in character is important, but of the greatest importance is the finding of rales and particularly fine crepitant rales. The rales found in tuberculosis, unless they are fairly large and coarse, and in the presence of a well advanced disease, are fine in character and found chiefly at the beginning or end of inspiration following an expiratory cough. If we find rales such as these, persistent, constant, and localized, they are of greater significance in the diagnosis than any other one sign except the finding of tubercle bacilli in the sputum. Note that I say the rales are fine in character, heard at the beginning or end of inspiration after an expiratory cough, and are persistent, localized and constant. I think these crepitant rales are of the greatest diagnostic importance. Other findings on auscultation, such as vocal fremitus, increased whispered voice, cog-wheel respiration, etc., are relatively unimportant.

X-ray. Next to physical examination the x-ray has come to occupy a most important place. Its importance and value in the diagnosis of diseases of the chest is now undisputed, but an x-ray picture, no matter how well taken, must be properly interpreted. An increase in hilus densities, and "peri-bronchial thickening" are not diagnostic of pulmonary tuberculosis. The thing of importance in x-ray diagnosis is to find mottled densities either large or small in the lung parenchyma, particularly in the outer half of the lung fields. The character of these densities, and their extent, distribution, and outlines are of great significance in the making of not only a diagnosis but a prognosis as well. With the introduction of this more recent and very accurate agency in the determination of pulmonary densities much information regarding the extent and character of the pulmonary pathology present has been gained, but there is no excuse for rushing a patient off to a roentgenologist for an x-ray picture and trying to make a diagnosis of pulmonary tuberculosis on the x-ray findings without taking a history, making a physical examination, or examining the sputum, etc., and this I am afraid is too frequently done. I have found many roentgenologists who are unable to make a correct interpretation of the findings on the x-ray plate. They usually find too much rather than too little.

The fluoroscope is of value in observing the aeration of the apices of the lungs and to observe the movements of the diaphragm. It is entirely unreliable in the determination of pulmonary densities. An x-ray examination means stereoscopic plates and not simply a fleeting fluoroscopic observation.

Tuberculin. Tuberculin, both cutaneous and subcutaneous, are of value. The cutaneous test is of no value in adults, but is of great value in children, and the younger the child the greater its value, and in making a statement of its relative value at different ages it may roughly be stated that it is ninety per cent. correct in children one year of age and under and decreases ten per cent. in accuracy with each added year of life. In other words, after ten years of age a positive cutaneous tuberculin test is of little or no value.

The sub-cutaneous test is of value in those cases in which a diagnosis cannot be made by the other agencies above mentioned, that is in the case that has many of the symptoms of tuberculosis and yet the physical signs or the x-ray findings are merely suspicious and not conclusive. A sub-cutaneous injection of old tuberculin will frequently bring out signs in the chest that are latent and with the production of a sharp

reaction at the site of injection and a sharp rise in temperature make the diagnosis conclusive. It is well to remember, however, that the tuberculin test does not differentiate active from arrested tuberculosis.

In recapitulation then, I consider the important diagnostic procedures in pulmonary tuberculosis to be 1. a careful history; 2. observation of the temperature and pulse over a period of several days. 3. sputum examination (a positive sputum is conclusive; a negative sputum is of little significance); 4. physical examination of the chest with patient stripped to the waist, and with particular stress on inspection and auscultation, and in auscultation the findings of persistent, constant, and localized rales; 5. stereoscopic x-ray plates, without too much attention being paid to hilus densities and peri-bronchial thickenings; 6. the use of tuberculin in young children (cutaneous) and sub-cutaneous injection in those adult cases in which a diagnosis cannot be made by the other procedures.

"Common sense, patience, and painstaking thoroughness on the part of the doctor are the true essentials in arriving at the truth. It is more what the physician has in his head and less what the patient has in his lungs on which the correct diagnosis and the patient's life depends."

HELIOTHERAPY (NATURAL AND ARTIFICIAL): ITS LIMITATIONS IN PEDIATRICS*

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Sea-shore, mountain and country-side have been extolled as places of convalescence from times immemorial. Various ancient Greek and Latin medical writers give indications and contraindicatons for heliotherapy. The gradations of exposure of the body recommended by several sound quite modern. Their thermal baths and many homes had solaria. Ancient pictures, unearthed at Pompeii, show how the roofs of many houses were arranged for sunbaths. With the advent of Christianity sunbaths fell into disuse. During the 18th and 19th centuries a few European clinicians used sunlight as a curative agent. Modern heliotherapy began in 1903, the year Rollier opened his hospital for children with surgical tuberculosis in the mountains of Leysin, Switzerland. He and numerous others since then have furnished indisputable clinical proofs that light has curative qualities. The French have their sea-side sanatoria; Escherich, and later Pirquet, have used the roof of the children's clinic in the heart of Vienna, Trudeau used the elevation at Caranac and Finsen at Copenhagen cured tuberculosis of the skin with the carbon-arc light. These clinicians and their numerous disciples found light therapy beneficial long before we had scientific data to prove the value or action of light.

Spectroscopic studies on sunlight, on the various kinds of artificial light, and on the permeability of the various kinds of glass for ultra-violet rays, and the perfection of the quartz spectograph have given heliotherapy a scientific basis.

Before such accurate knowledge light therapy was a phase of clinical empiricism. We have now begun to learn why some diseased conditions are benefited, others uninfluenced or harmed by exposure to light.

At Rollier's 1,200 bed hopsital 4,000 feet above sea level only natural sunlight is used. His technic is as follows: The head is protected during the first 3 weeks of treatment; goggles are worn, and the front and back are exposed three times daily with 10 minute intervals as follows:

1st day only the feet are exposed for 5 minutes.
2nd day feet 10, up to knees 5 minutes.
3rd day feet 15 up to knees 10, hips 5 minutes.
4th day feet 20, up to knees 15, hips 10, abdomen 5 minutes.
5th day feet 25, up to knees 20, hips 15, abdomen 10, chest 5 minutes.
6th day feet 30, up to knees 25, hips 20, abdomen 15, chest 10 minutes.
7th day feet 35, up to knees 30, hips 25, abdomen 20, chest 15 minutes.

The patient is then gradually exposed longer until he spends from 2 to 4 hours in the sun. After pigmentation is complete accidents seldom occur. Until then, harmful symptoms may arise. They are, in the order of frequency: temperature elevation, tachycardia, dyspnea, headache, sleeplessness, anorexia and depression. Factors which influence natural heliotherapy are: geography, altitude, season, time of day, humidity, clouds, temperature, wind velocity, pureness of the air, and the reaction of the individual. Exposure should be given before the noon meal, or, on hot days, in the morning or afternoon. This

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multiplicity of influencing factors with their uncontrollable daily variations has limited natural heliotherapy. Some of the shortcomings are:

1. The daily variations in the amount of ultraviolet rays often make progressive treatment impractical.

2. Sunlight is not always available (winter, inclement and cloudy days).

3. The curative rays are weakest when and where they are most needed—in winter, late autumn and spring, for young infants in congested industrial centers.

4. Prolonged exposure of infants and delicate children in cold weather may prove hazardous. Serious respiratory infections with their ensuing complications may do more harm than the benefit which might be derived from a fleeting exposure to the sun.

5. On hot days sun baths must be given with great caution, as the excessive heat may cause anorexia, vomiting, diarrhea, sunburn, heat stasis or sunstroke.

6. Window glass absorbs most of the beneficial rays.

7. Individuals respond differently to a definite amount of light.

Despite these shortcomings, Rollier maintains that natural sunlight is far superior to artificial light, regardless of its source. He maintains that natural sunlight contains beneficial rays not emanated by any artificial light. He adds that if the quartz lamp is used, then a heat lamp of the Sollux type should be used in conjunction in order to enhance penetration.

Hulschinsky's fundamental observations on artificial light therapy in rickets were supported by convincing x-ray roofs. He found that only rays under 310 $\mu\mu$ are of value. Studies on blood chemistry by Rothmann and others show the calcium and phosphorus content of the blood in rachitic infants increased after exposure to light. Hess, Steenbock and György found that food exposed to ultraviolet radiation acquired antirachitic properties, but subsequent work by English observers showed that food so treated is changed chemically and some of the products formed are more or less harmful to infants. Stepp thinks that in the skin exposed to ultraviolet light a vitamin-producing substance is formed. Windhaus claims to have isolated chemically what he calls "provitamin." Others maintain that the protein metabolism, the quality and quantity of leucocytes, the hemoglobin, the sugar content of the blood, the protective mechanism against infection and various other bodily functions are influenced by exposure to sunlight or ultraviolet radiation. It is questionable whether all of these actions are dependent upon the vitamin formation or production in the skin. Shubert's studies lead to the conclusion that a resorption of ultraviolet energy occurs in the blood stream of the skin capillaries. Whether all of these changes occur equally in health and in disease needs further study. For example, it has been claimed that the percentage of hemoglobin is increased by systematic exposure to ultraviolet light, but will exposure, *per se,* cure anemia due to various causes?

In few fields of therapy has such overenthusiasm occurred as in artificial heliotherapy. It is unfortunate that such a valuable therapeutic agent should be so lauded and misused that its true worth becomes discredited by many critical physicians. Professor Laqueur of Berlin recently paraphrased the indiscriminate use of the lamp when he said: "For some there are scarcely any contraindications—for them the artificial sun never sets."

The greatest field of usefulness for artificial light is when natural sunlight is not available, i. e., as a complement to sunlight on cold, cloudy or inclement days. The room should be warm when infants and delicate children receive treatment. The skin capillaries must be dilated, but chilling of the body must be avoided. The room temperature should not be below 80° F. An auxiliary heat lamp of the Sollux type should be in simultaneous operation to enhance the penetration of the rays. If the weather is cold, ample time should elapse before the child is permitted out of doors after a treatment, as sudden changes in temperature may cause chilling or loss of body heat whereby a respiratory infection may be precipitated. The eyes of the operator and patient must be protected throughout the treatment, the length of exposure must be gradually increased or the distance between burner and patient cautiously decreased. Technicians do not agree on the rate of increase. Some maintain that erythema and pigmentation should be avoided; others claim that the desired result of

an exposure should be a transient erythema which lasts but a few hours; others, that pigmentation should occur and the exposures gradually prolonged until the skin acquires a marked coat of tan. Overexposure may cause any or all of the symptoms enumerated under natural heliotherapy, and should be avoided.

By the aid of the Keller erythemadosimeter it has been found that the deposit of mercury on the inside of the quartz burner causes an appreciable reduction in the amount of ultraviolet ray emanation. This means that the efficiency of a burner decreases with use. Recent studies have shown that within six months of modern usage about 7/8 of the beneficial rays no longer leave the burner. European authorities now recommend that burner emanation be tested at least twice a year. This is seldom sufficiently emphasized. A simple but less accurate way to determine the strength of a burner and the reactivity of an individual before beginning a course of treatment is as follows: Place a sheet of paper with six half-inch perforations on the exposed abdomen, cover the rest of the body, and expose the perforations from one to six minutes. The number of minutes required to produce an erythema dose will give a rough estimate of the strength of the burner and the susceptibility of the patient. At least 15 treatments should constitute a course, preferable 5 treatments a week (omission on Wednesdays and Sundays), never less than three treatments a week.

Indications and contraindications for heliotherapy. The following systemic conditions are benefited by heliotherapy: tuberculosis of the bronchial glands, cervical glands, peritoneum, pleura, bones, joints or skin; rickets and tetany. Superficial conditions such as erysipelas, pyodermatoses like impetigo (especially of the newly born), acne, furunculosis, and chronic ulcers of the skin often heal after a few treatments. In the latter the action is doubtless mainly germicidical. Some clinicians report benefit in delicate, poorly developed children who get infections easily or who are slowly convalescing from infections.

Bronchitis, asthma, pertussis, enuresis, hayfever and dry eczema are seldom benefited. Heliotherapy is contraindicated in most febrile diseases, especially in active pulmonary tuberculosis, also in most nervous disorders, especially in chorea.

SUMMARY

1. Heliotherapy has a definite but limited field of usefulness in pediatrics.
2. Artificial heliotherapy should be used only when natural sunlight is not practical.
3. Harm from chilling and overexposure must be avoided.
4. Heliotherapy should be resorted to as an aid in treatment only in those conditions that are benefited by its use.

PREVENTION OF PUERPERAL INFECTIONS

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ELMHURST, ILL.

Maternity is an event that, to the expectant mother, is more important than any athletic contest. It is a contest, a race or competition in which the physical perfection, assisted by medical skill, is pitted against the many pitfalls that block the path to the goal, a normal delivery and puerperium. Not many athletes enter a contest without proper training and preparation, for to ensure success the first requisite is to reach the highest degree of physical perfection. This can not be attained by one's efforts alone, one must have an advisor or a trainer. In maternity this factor is often overlooked and the advice of a physician is sought too late or after difficulties arise.

Every woman who is, or may become, pregnant, needs the advice of a skillful physician. The mere sending of a specimen of the urine to the office every month is not sufficient, frequent personal interviews and observation by the physician are necessary in order that he may guard the patient against the dangers that are threatening.

The physician often sees the pregnant woman for the first time when nausea and vomiting appear. This is the time to explain to the patient the necessity for frequent consultation and the institution of an intensive period of training, to reach the highest possible state of physical perfection. To reach this state one must insist upon dietetic regulation, sufficient and graduated exercise, exposure of the body to sunshine, sufficient bathing, and attention directed to the importance of normal function of the

bowels and kidneys, and to the eradication of foci.

The dietetic regulation is of great importance and must be stressed. The reasons for restrictions of diet are many; to preserve the teeth and supply proper bone food for the baby; to prevent obesity, hypertension, eclampsia, pyelitis and acidosis. The proper caloric values should be furnished but gluttony should be warned against. A normal diet as outlined by Sansum[1] is recommended; this balances the acid ash foods against the alkaline ash foods and a preponderance of the latter is to be desired. An excess of the acid type of food would lead to dangers of kidney irritation, pyelitis, albuminuria or acidosis. The acid ash foods also are deficient in mineral salts and vitamins which are so important. The alkaline ash foods such as vegetables, fruits and milk must constitute the greater part of the diet. Whole wheat cereals, bran and rye or whole wheat bread must be used. Eggs contain valuable mineral ingredients and with milk should be the chief source of protein. Raw vegetables and fruit must be used every day.

It is, of course, necessary to take the blood pressure on every possible occasion. One often finds pressure as high as 150/110 in young expectant mothers who have been injudicious in their diet. A pressure of 140 should be considered the high normal level and strenuous dietetic measures should be instituted to reduce it. That means reducing protein to the minimum, abstinence from tea, coffee, cocoa or chocolate, and salt restriction. Warm daily baths and good elimination from the bowels are helpful. The bowels should be regulated by diet, mineral oil or enemas.

Exercise should be insisted upon. The muscles must be trained to meet the strain of labor. An indolent life leads to atonicity of the muscles and may mean a lingering labor often jeopardizing the safety of mother and child and frequently necessitating difficult forceps delivery. Walking, calisthenics, proper posture and normal household duties yield sufficient exercise. Exposure of the body to the sun is essential.

It is of the greatest importance to the pregnant woman that she conserve and utilize to the fullest extent, the mineral content of her food. This is brought about by the fixation in the blood stream of the main salts, calcium, iron and phosphorus, by exposure of the body to ultra violet radiations from the sun or from the quartz lamps, thereby preventing their loss through the bowels and kidneys. In the winter, spring and fall the ultra violet lamp should be used. This is an important preventive measure in the undernourished, underweight and anemic types; for one often sees tuberculosis, especially during the lactation period, develop in these women.

An important topic that is not much discussed is the relation of septic foci to puerperal infection. I have seen four cases of puerperal infection that seemed to follow focal infections. Bad teeth or septic mouths were present in all these cases. It is possible that a normal delivery might follow in one with such a focus, if there were no dystocia. But granted such a focus were present and the blood stream contained streptococci, or other pathogenic organisms, and that the patient was not properly trained for the ordeal of labor and that interference was necessary, such as application of forceps with episiotomy or laceration and subsequent repair, the resultant shock with the lowered vitality of the tissues and poor blood would make it easy for the pathogenic organisms to gain a foothold. After they are established in the tissues, whose resistance has been lowered, they are hard to eradicate. Three of my patients had a temperature of 99+ on their admission to the hospital, the other was not observed. One patient, a two-para, who had been threatened with miscarriage a few times and had two teeth with apical abscesses, had a normal delivery, no vaginal examinations had been made, but a chill developed four hours later with a temperature of 102 and she was sick for three weeks with fever. Her temperature when admitted to the hospital was 99.6.

Another case, a primipara, aged twenty-nine, presented herself for the first time at the eighth month, on account of swelling of the limbs. She had blood pressure of 170/110 and albuminuria. Her mouth was septic; she had about eight devitalized teeth and heavy deposits on teeth at gum margins, with retracted and swollen gums. A rigid diet, oral hygiene, catharsis and rest, brought the blood pressure down to 140/102 and a diminution of the dropsy. She was in poor condition for the ordeal of labor; her temperature on admission to the hospital was 99.4. A long, tedious labor was terminated by forceps delivery and the perineum was sutured. The temperature gradually increased and persisted in

an irregular manner for three weeks after which she made a slow recovery.

The third case, a primipara, aged twenty-five, had a history of acute pleurisy with effusion. She was anemic and underweight and presented herself at third month because of hoarseness. She had definite tenderness over right frontal sinus. Suspected T. B. but specialist diagnosed no tubercular condition. She was advised to report regularly for ultra violet radiations but failed to report and did not cooperate well. She had a somewhat prolonged labor but delived spontaneously; a perineal tear necessitated six sutures. She developed a chill on the third day and showed no resistance to the infection and died on the ninth post partum day.

Another case, a three-para, cooperated well but did not have two abscessed teeth cared for. She was anemic but otherwise normal. Her temperature on admission was 99.6. She had a breech presentation that was slow and prolonged; the fetus had the cord around its neck and difficulty was experienced in getting its arms down. In spite of extreme asphyxia the child survived. Crede expression of the placenta was tried every ten minutes without avail. After waiting one and one-half hours, manual removal of an adherent placenta was done. No chill developed but temperature remained around 99.6 for three days when 102 was reached. It remained irregular for three weeks more.

All patients had pulse rate of disproportionate ratio compared to the temperature. Pulse rates ran 120 with a temperature of 101. All but one had diarrhea with some tympanites. No accumulations of pus were found.

We all are astonished at the successful outcome of the labor and puerperium in some of our cases with filthy environment. One sees many such cases and then wonders at the seeming inconsistency of these patients getting well while others with the best modern institutional care succumb to infection. I believe our modern technique deals effectively with exogenous infections, but more attention must be directed to those of endogenous origin.

I believe rubber gloves to be the biggest factor of safety to patients from dangers of exogenous infections. An elaborate plan of sterilization is not essential to the successful use of gloves. The hands should, of course, be scrubbed and the gloves clean. After the gloves are put on, they can be sterilized by swabbing with pure lysol, alcohol or any effective germicide, and then rinsed with sterile water. This technique can be easily used by the country practitioner and fills his needs better than the old method of one sterile pair of gloves. It is impossible for a physician to keep his gloved hands sterile, when in attendance at a confinement, without skilled help. This plan makes it easy to do so.

More attention should be given to the endogenous source of the infections. The blood should be sterile and foci removed preferably before conception occurs. The teeth, sinuses, tonsils and other focal points should be investigated and treated if necessary. The blood should be made as resistant to infection as possible and in patients with focal infections, vaccines should help to increase resistance against the pus forming germs. Edgar[2] uses vaccines in puerperal fever and speaks favorably of their use. The opsonic index for the streptococcus should be taken in anemic and below par patients or those with focal infections and treatment instituted if found subnormal, or vaccines should be used empirically in these cases. The focal infections explain many cases of miscarriage where you have looked in vain for a positive Wassermann. The placenta will show infarcts that are caused by the focal infections.

It should be our aim and effort to see that the expectant mother approaches the ordeal of labor with blood fortified against the invasion of the pathogenic organisms and with tissues whose tone and resistance have been raised to the highest point of efficiency through the agencies at our command.

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LIPOID NEPHROSIS*

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The term nephrosis was first used by Muller to distinguish a type of kidney disease characterized by degenerative changes in the tubules. There are several forms of kidney degeneration which are etiologically, pathologically and clinically distinct entities. One of these forms is

*Read before Chicago Medical Society.

characterized by lipoid degeneration of the tubular epithelium. The term lipoid nephrosis, suggested by Munk, is generally used to distinguish it from other degenerative kidney lesions. In this type of nephrosis the kidneys are larger and softer than normal. The surface is smooth and grayish in color and the capsule strips off easily. On cut section the cortex is wider than normal. Microscopically the changes are those of lipoid degeneration of the proximal and distal convoluted tubules. The glomeruli are not obstructed although some may show lipoid deposits. Lipoid nephrosis occurs very rarely in a pure form. Until 1922 Fahr had been able to study the kidneys of only nine cases. Osler referring to the large white kidney of chronic tubular nephritis, (lipoid nephrosis?) stated that he had had in his wards but 30 such cases with autopsy. Lipoid nephrosis is frequently mistaken for nephritis with results which are often disastrous to the patient. In referring to lipoid nephrosis as a kidney disease it should not be understood that the characteristic symptoms are due exclusively to renal degeneration. Other tissues participate in the pathologic changes and contribute to the symptomatology. The clinical and chemical findings can not be explained satisfactorily on any other basis. It is unfortunate that there is no designation which indicates the importance of extra-renal factors in this as well as in other forms of kidney disease. The view that nephrosis is not primarily and exclusively a renal disease has been emphasized repeatedly by Epstein and others. The lipoid type may exist without the occurrence of kidney failure as judged by commonly accepted standards.

The function of the kidneys is to eliminate urea, uric acid, creatinin and other end-products of protein metabolism; to assist in maintaining the neutrality of the blood by excreting chlorides, phosphates and other salts; and to assist in maintaining the proper concentration and volume of the blood by excreting excess water. This triple excretory function must be performed without permitting the escape of glucose and plasma colloids. Diffuse inflammatory disease of the kidney as well as some types of nephrosis often result in renal insufficiency as indicated by failure to eliminate water, salts or nitrogen. In lipoid nephrosis the nitrogen concentration in the blood is normal; the output of water is in proportion to the amount available for excretion; the concentration of salts in the serum is normal and clinically at least acidosis does not occur.

Lipoid nephrosis is characterized clinically by an insidious onset and a chronic course. The patient at first complains of fatigue, lack of interest, lack of appetite and later of a gradually increasing edema. At first the edema is present only in the feet and ankles at the end of the day and in the lumbar region on arising in the morning. Later it is present constantly and becomes the dominant clinical sign throughout the course of the disease. The urine contains a large amount of albumin and casts of all kinds. It is highly colored and has a high specific gravity. The output for 24 hours is decreased. Examined under polarized light doubly refractive lipoid bodies may be seen. Hypertension is absent and the heart does not become enlarged. Retinal changes are lacking. As a general rule the concentration of nitrogen in the blood is normal although a temporary increase may be observed following a rapid disappearance of edema. There is a moderate degree of secondary anemia and a marked decrease in the total amount of plasma protein. The decrease is principally in the albumin fraction. Blood cholesterol is increased while the blood chlorides are about normal. The rate of metabolism is from 15 to 25 per cent below normal.

Case Report: L. Z., a white man aged 32 years, was admitted to the Medical Dispensary of Northwestern University, December 11, 1926. He complained of edema of the lower extremities, scrotum, abdomen, back and face. He had had measles, whooping cough and an operation for acute appendicitis before the age of 14. At the age of 29 he had rheumatic pain and frequent sort throat. Removal of his tonsils gave complete relief from pain. Edema first appeared two months after the tosillectomy. About one year later a diagnosis of nephritis was made on the basis of edema and albuminuria. A diet was prescribed from which meat, eggs, salt, vinegar, coffee and tea were excluded. His fluid intake was restricted to one quart daily. About eight weeks prior to his admission to the Dispensary he spent sixteen days in a hospital. The diet to which he had already been faithful for 17 months was again prescribed and sweats and catharsis

were used to reduce the edema. He was discharged improved, but within a few days the edema had recurred.

The positive physical findings on admission to the Dispensary were, marked edema of the legs, scrotum and lumbar region, a lesser degree of edema of the face and hands; palpable lymphatic glands at the angle of the jaw on each side and a tag of tonsil in the right fossa. The urine contained a large amount of albumin and casts of all kinds. It also contained a great many pus cells. Bacteriological examination showed the presence of staphylococcus albus. There was a slight secondary anemia, the red cells numbering 4,160,000. The negative findings included a normal retina and media; a heart normal in size, shape, position, rate and rhythm and a systolic pressure of 130. A blood Wassermann was negative. The renal pelves were normal in size. On the basis of these findings the previous diagnosis of nephritis could not be accepted as correct. He was admitted to Wesley Memorial Hospital for further study. A diet containing 150 grams of protein, 150 grams of carbohydrate (later increased to 300 grams), and 50 grams of fat was prescribed. No sodium chloride was added to the food. There was no restriction of water, the patient's desire for liquids being allowed to govern the intake. A metabolism rate of minus 20.8 was obtained and 9 grains of thyroid extract daily was prescribed. On admission he weighed 182 pounds. At the end of the first week he had lost 7 pounds in weight and the edema was much less. Two weeks after admission he developed an acute sore throat and at once the amount of albumin in the urine increased. The tag of tonsil was removed and found to contain free pus. On discharge after 27 days' hospital residence he weighed 149 pounds. The loss of 33 pounds was accelerated by the use of 52 grains of thyroid extract during the first two weeks. Novasurol, ammonium chloride or other diuretics were not used. Despite this the edema had entirely disappeared at the time of discharge. The high protein diet did not lead to the retention of nitrogen. Following his discharge from the hospital the patient adhered as closely as possible to the prescribed diet and, although he has some edema of the ankles, he is able to work.

TABLE 1

Blood Analysis in a Case of Nephrosis. Figures represent mgs. per 100 c.c. of blood

	Normal	L. Z. on admission	1 mo. later	5 mo. later
Non-protein nitrogen.	25–35	35.7	35.6	32.8
Urea nitrogen	12–15	15.8	16.3	22.9
Uric acid	2–4	3.96	4.96	..
Creatinin	1–2	1.54	..	..
Chlorides as NaCl...	450–500	471.9	462.0	488.4
Calcium	9–11	..	..	9.8
Cholesterol	140–175	301.0	297.0	294.0 350.0
Lecithin phosphorus..	12–14	..	..	36.4
Neutral fat	600	..	..	510.

The above figures show the characteristic increase in lipoid substances and the normal nitrogen values. They also show that it is possible for a case of lipoid nephrosis to use a high protein diet over a period of months without clinically harmful effect. The concentration of lipoids in the blood is not a result of renal insufficiency, since under normal conditions none of these substances are eliminated by way of the kidney. Their abnormal concentration is probably an expression of failure on the part of the tissues to utilize their nutritive supply as in the lipemia of diabetes. In 1923 Claussen[1] reported the discovery of a lipoid substance in the serum and urine of cases of lipoid nephrosis and nutritional edema which had the power of rendering pyroxlin sacks permeable to albumin. He did not state whether this surface active substance exerted a similar effect on animal membranes. The experiments of Claussen were repeated by me using pyroxylin sacks and sacks prepared from the cecum of the sheep. Ordinary diffusion thimbles were found unsatisfactory. The sacks permitted the passage of salts and a nitrogen body giving a ninhydrin reaction but in no instance were they permeable to albumin. The concentration of lipoids in the serum leads to a lowering of the surface tension. Using the new tensiometer of duNoüy, my associate, Dr. C. J. Farmer, found the surface tension of the serum in this case of nephrosis to be 53.6 dynes. Distilled water at 23 degrees C gave a reading of 73.4 dynes per centimeter. Not only is the surface tension of the blood serum of nephrosis lower than that of normal serum but is also lower than the serum from cases of acute and chronic nephritis as shown by Leiter[2] using the original instrument of du Noüy which gives results slightly higher than the more recent instrument.

The concentration of chlorides in the blood and tissues is intimately related to the subject of edema. The introduction of sodium chloride into the body leads to temporary retention of water until the amount of salt in excess of the normal threshold is eliminated by the kidneys. If the kidneys are unable to excrete sodium chloride in a normal manner edema occurs. In the case of lipoid nephrosis which forms the basis of this report the highest concentration of blood

1. Claussen, S. W.: J. Biol. Chem. 59: 45, 1924.

2. Leiter, Louis: The Jour. Clinical Investigation. 3:267, 1926.

chlorides was 488.4 mgs. per 100 c. c. of blood. During the first six days of hospital residence while the patient was on a low salt diet the average daily output of chlorides in the urine was 8.4 gms. The average daily output for the next three weeks was 3.59 grams. Despite the normal value for blood chlorides and the low chloride content of the urine it seems probable that the tissues had an abnormal affinity for chlorides. This was indicated by the fact that wheals produced by the intradermal injection of salt solution disappeared within two minutes.

The ability to eliminate excess water and to concentrate the urine are among the important functions of the kidney. It is difficult to estimate this function in the presence of edema. Table 2 illustrates the results obtained with a Volhard dilution and concentration test. The only conclusion which can be drawn from these data is that in this case the nephrotic kidney was able to secrete a urine with a very low specific gravity. During the concentration test the highest specific gravity reached was 1.020 although on other occasions urine with a specific gravity of 1.028 was voided frequently.

TABLE 2

Dilution and Concentration Test in Cast of Nephrosis. 1500 c.c. of water taken as rapidly as possible between 7 and 8 A. M. The diet being dry and no additional fluid being taken until the next morning.

Hour	Amount of urine voided	Rate of excretion per hour in c.c.	Specific gravity
8:00 A. M.	45 c.c.		1.015
9:00 A. M.	225 c.c.		1.002
10:00 A. M.	210 c.c.		1.002
11:00 A. M.	75 c.c.		1.006
Total for 4 hours	555 c.c.		
1:30 P. M.	112 c.c.	44.8	1.014
3.30 P. M.	232 c.c.	116.0	1.010
4:20 P. M.	120 c.c.	120.0	1.010
6:00 P. M.	105 c.c.	70.0	1.014
8:15 P. M.	120 c.c.	60.0	1.016
1:45 A M.	270 c.c.	45.0	1.018
4:45 A. M.	120 c.c.	40.0	1.018
7:00 A. M.	68 c.c.	34.0	1.020
Total for 20 hours	1147 c.c.		

Phenolsulphonpthalein Test

Hour	Amount of urine voided in c.c.	Per cent of dye
9:00 A. M. (Dye injected 8 A. M.)	100	47
10:00 A. M.	65	25
10:30 A. M.	200	8
11:00 A. M.	340	5
12:00	500	2
		87

During the period covered by the above analyses no attempt was made to restrict the fluid intake. The diet was low in chlorides. During the first two weeks a total of 52 grains of thyroid extract was given. Although the kidney of lipoid nephrosis is functionally efficient in most respects it is defective in one respect in that it is unable to prevent the escape of blood colloids. The constant albuminuria results in a reduction of the serum albumin from about 92 per cent of the total serum protein to 40 per cent or less.

TABLE 3

Urinary findings

Day	Vol. in c.c.	Sp.Gr.	Grams in 24 hours Total N	N.P.N.	Albumin	Chlorides
3	2150	1.009	7.15	6.28	5.42	8.38
6	2400	1.018	13.67	9.15	28.20	8.56
7	2075	1.014	15.73	12.80	18.30	4.56
8	2050	1.011	19.50	14.45	31.60	2.87
9	1180	1.022	16.38	13.50	18.00	3.30
10	1045	1.024	18.10	15.81	14.30	4.84
11	1140	1.025	18.15	16.55	10.00	4.68
13	1075	1.026	19.35	17.35	12.50	3.12
16	1058	1.028	16.00	14.70	8.14	3.69
17	1015	1.026	16.38	13.91	15.43	2.54
19	780	1.028	13.90	12.60	8.14	2.57
24	670	....	9.50	8.86	4.00	5.10
26	695	1.022	5.26	4.40	5.36	3.48
27	1450	1.016	11.45	9.90	9.70	3.35

TABLE 4

Protein Content of Blood in a Case of Nephrosis

	Albumin Gms per 100 c.c.	Globulin Gms. per 100 c.c.	Fibrinogen Gms. per 100 c.c.	Total
On admission after 17 months of albuminuria. Treatment low protein diet	1.76	2.30	0.39	4.45
Treatment: High protein and low salt diet 1 month	1.84	1.75	0.54	4.13
Treatment: Same 5 months	1.87	1.89	0.94	4.70
Treatment: Same 11 months	2.40	2.00	0.40	4.80
Normal	7.76	0.41	0.24	8.41

It has been suggested that the loss of serum albumin is in part responsible for the presence of edema which is such a marked and constant sign of lipoid nephrosis. That has not been true of the case under discussion. Edema is scarcely visible while the diet is low in chlorides. There are two reasons for prescribing a high protein diet for cases of lipoid nephrosis: one is that nitrogen balance must be maintained; the second is that protein accelerates the rate of metabolism. To increase the rate of metabolism still further Eppinger and others advise the use of from 10 to 20 grains of thyroid extract daily. This appears to be an unusually large amount but it has been shown repeatedly[3] that patients with lipoid nephrosis can tolerate very large amounts of thyroid extract over long periods of time, and that the increase in the rate of metabolism which it produces aids in the utilization of blood lipoids. The importance of maintaining nitro-

gen balance can not be over-emphasized. I have seen patients with nephritis whose muscles were hard and whose general condition fair, placed on a low protein diet and in the course of a few months transformed into wasted invalids. It is true that the course of treatment reduced the amount of albumin in the urine but it also reduced the amount of albumin in the tissues. The 31.6 grams of albumin lost by L. Z. on the eighth day of hospital residence was the equivalent of all the albumin in 1800 c. c. of his serum or of all the coagulable proteins in 700 c. c. of his serum. On the same day he lost 14.45 grams of non-protein nitrogen as a result of the breakdown of 90 grams of protein, making a total protein loss of 121 grams. The diet prescription for 150 grams of protein was, therefore, not excessive since it permitted storage of a small amount. Nitrogen balance could have been maintained on a smaller amount of protein but the specific dynamic action of the larger amount would have been sacrificed.

30 North Michigan Avenue.

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APPLIED RAILWAY SANITATION*

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We who assemble here together should be very proud to have been born at the right time and to have acquired the proper education in the course of growing up to see and comprehend the birth of a new department of knowledge and to realize that its birth resulted from causes wholly necessary to the world's progress, evidences of which surround and astound us on every side.

We marvel at the progress of aerial navigation but we have equal cause and can marvel more understandingly at the great strides which are being made in medicine and we have providentially been permitted to be present at the birth of this lusty infant, "Preventive Medicine," which is growing so rapidly and demanding more of our time and attention each successive year.

We assiduously pored over our materia medicas and anatomical charts and with painstaking effort mastered the knowledge therein contained; we went forth into the world with our cases packed with medicines and our heads bursting with medical knowledge to relieve suffering and distress among our unfortunate fellow mortals and because we were so busy in the practice of our profession, the first whisperings of a new truth did not reach us all and we toiled on in the age old fashion.

Now the whisperings have grown to loud voiced proclamations and but few of us have not heard and realized that a new age in medicine has dawned. With infinite pains and accumulated experience, we have toiled ahead on the rocky road towards the heights of success, crowned with dazzling golden light and, looking backwards, wonder why this beginning was never made before.

Yet our knowledge of life and its ills is not in vain for with the ability to determine causation of disease we are able to give battle to obscure happenings never heeded in times past and by so doing prevent sickness in its very inception or even before its actual occurrence. Hygiene and sanitation are no more important than they were before but we began to realize their importance and guide our course thereby. Hygiene will, of course, have no place in this paper, dealing as it does in the care of the individual and therefore especially the province of the physician but sanitation, dealing with the environment of community, will be considered because it is constantly becoming more complicated and important as year after year laws are promulgated which direct us to do thus and so in order to obtain the best sanitary results.

There is no word more misapplied and misused than this word sanitation and one is apt to be confused and misled when contemplating the stately sanitary edifice which towers upwards in the clear light of knowledge and short-sightedly exclaim "how beautiful but how complicated."

Thinking observers immediately perceive that such an edifice must have a mighty foundation and upon looking for it, they perceive a rough and sturdy block of imperishable granite, immutable as truth itself, yet simply and clearly

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cut. This block, the corner stone of our sanitary edifice, is cleanliness.

It is the letter "A" in the sanitary alphabet without which it would be incomplete.

A certain railway official of high standing and long experience was told of the existence of certain unfavorable conditions prevailing in an office building and asked what should be done about it; his reply was brief and characteristic —"clean it up."

In one word he had voiced the fundamental truth of all sanitary work, *"Clean."* He did not worry about how the cleaning was to be accomplished nor what materials were to be used, he wanted it cleaned and at once.

The question arises as to what agent is the best cleanser and we hark back to the wisdom of our forefathers and unanimously exclaim "soap." All sorts and makes of cleansers have been placed on trial and always we have come back to soap, which applied with a judicious admixture of water, gives us a fundamentally clean surface, the alpha and often the omega of cleanliness.

A soap with the least alkaline reaction, that is, as nearly neutral as possible, is best for use on highly finished or varnished surfaces and it has been found to be good economy to mix the soap and water in hundred gallon tanks with a faucet at the bottom, thus enabling the employe to draw a pailful of soap and water already mixed in the proper proportions. This saves wastage in the use of soap.

In order to ascertain what sanitary measures must be undertaken a careful system of inspection must be carried on and upon this inspection system and its records depends the success or failure of our efforts. Blanks for various forms of inspections with questions covering conditions investigated should be prepared and the inspection reports received on these briefed and filed. For its competitive effect locations inspected may be graded and graphs made of the results but it is to be carefully borne in mind that inspection presupposes knowledge on the part of the inspector of the location or apparatus which he is inspecting; without this knowledge inspection is a failure and a farce and had best be abandoned inasmuch as improper and incorrect reports only cause trouble for all concerned and necessitate reinspection and correction, which is expensive and unnecessary.

Another important feature of inspection is the ability and desire on the part of the inspector to make helpful suggestions to the employe in charge of the location inspected—to let them understand that the inspection is being made in order to make improvement and not merely to report conditions as seen. It is truly wonderful what a difference this idea of helpfulness, honestly carried out on the part of the inspector, makes in the results attained. Subsequent visits and inspections are rendered doubly productive of improvement and all because of the cooperation of the parties concerned.

The inspection report should terminate with recommendations for the correction of faulty conditions observed and such recommendations, when they include work to be performed, should be accompanied by an estimate. Now all this sounds dry and uninteresting but I am endeavoring to apply (as the title of my paper implies) sanitation in corporation work, where efficiency is absolutely necessary and where results are carefully observed and compared with previous conditions, where your figures are checked accurately and an improvement never undertaken without consideration by at least three different departments, all cooperative and interdependent.

Now I want to tell you about the railway sanitary code, the most important step in the progress of sanitation on the railroads ever taken. It is necessary to have a standard in the performance of all work, a mark to shoot at, in other words; the absence of such a standard was keenly felt by the railway corporations because there was lack of agreement between the state authorities and the railways as to the best means to accomplish the sanitary end. Through the efforts of a number of interested and experienced sanitarians such a standard was established and incorporated in a code known as the standard sanitary railway code. These specifications were made in agreement with the sanitary specifications of the various states with such modifications as were necessary to the proper operation of the railways and have been adopted by the American Railway Association and accepted by some forty-five of the states through which railways are operated and maintained. Before the adoption of this Code the railways were

constantly confronted with the task of meeting different state rulings and where twelve or fifteen states were traversed, I can assure you that the task of complying with existing state rulings was a most difficult one. Since the adoption of the Railway Sanitary Code, matters have become much simplified and greater progress and better cooperation have been attained.

In the application of sanitary principles much difficulty was experienced in the matter of drinking water supply in coaches operated on the various systems. You will all recollect stopping at a station and seeing a man enter the end of the coach with a bucket of water which he proceeded to pour into a receptacle with a spigot at its lower end. No one knew just where this water came from and the idea of carrying it in an open bucket gave no offense because such a method was customary.

We all used to drink out of the old tin dipper in blissful ignorance of any possible harm. Today witness the remarkable change which has taken place—all sources of drinking water supply are reported to the Government, a survey is made and samples taken; if both are satisfactory and in accord with established and printed standards, the Surgeon-General of the United States Public Health Service notifies the railway, sending written permission to use such water for drinking purposes. Further the receptacle into which the water is poured must be cleaned rigorously, the container in which the water is carried must be of a standard construction and still further, must be kept in a dust proof closet during the time it is not being used. And at once you ask, are these severe measures necessary and justifiable and I reply by saying that because of them there are men seated in this room who have never seen a case of typhoid fever—yes, a thousand times yes, are these severe measures justified but no one knows with what toil and travail these results were attained but he who has served in the front line trench and gone over the top in the sanitary battle.

There exists at present an unfortunate misunderstanding as to the limitations and usefulness of medical knowledge with regard to sanitation. Medical training gives its votary biologic knowledge of disease causation, inception and course together with treatment, the latter usually of a remedial nature. This is felt to be the strict limitation of the medical man in his relation to diseased conditions.

With a knowledge of this nature concerning disease the medical man is usually content, because such knowledge has only been attained by years of patient study and arduous experience. There is something more, however, to be considered in the elimination of faulty conditions or in planning prevention of causation and to fill this need there has arisen a new profession, called sanitary or health engineering. To illustrate: the medical man judges the ventilation of a certain room to be faulty and recommends bettered ventilation. Right there is where the sanitary engineer steps in and fills the scientific gap—he determines the contributory factors in the problem precisely and mathematically, figures the exact needs of the occupants of the room under investigation and determines just what and how much of it is needed to solve the problem. It is an engineering proposition and an engineer is needed to solve it and his education and training have fitted him for this especial purpose and in performing this task he is the ally of the medical man. Sanitary engineering may be defined as the art of directing the forces and activities of nature to the improvement and protection of public health and in the practice of sanitary or health engineering are included the problems of heating, lighting and ventilation together with housing, water supply, disposal of wastes, milk and food supply supervision and other activities.

In other words, the physician handles the biologic and the sanitary engineer the health engineering part of the public health work.

There is no interference, no overstepping of the boundaries on either side, a clear line of demarkation exists yet both work together for the betterment of public health.

Physicians should realize these facts and submit their problems to the health engineer for his handling.

And now comes the most difficult question yet encountered in the progress of preventive medicine, namely, the periodic examination.

In speaking of this boon to mankind as a difficult problem, I mean especially in corporation work where there are great numbers of

employes who are urged to avail themselves of the opportunity to have a complete physical examination and who, for various reasons, refuse. A great locomotive is inspected many times a year for possible defects and these, if found, are speedily remedied, yet man, with his infinitely more complicated machinery balks at such an inspection. It may be that he fears that something may be found wrong and is afraid to have the fact known. Just what his reason is for not willingly and happily submitting to such an examination is hard to determine but this much we know, that our employes will have to be educated up to this feature and by persuasion and example of their fellow workers made to feel that it is for their good and not an effort by their company to find out something which might interfere with continued relations.

The American Medical Association has issued an excellent book outlining the course of a complete physical examination together with printed blanks for the proper recording of results obtained.

In the consideration of applied sanitation on the railways it may not be uninteresting to recount briefly the history of the movement. Eighteen years ago the Illinois Central appointed a new chief surgeon who at once detailed an M. D. to act as Health Officer, this being as far as I know, the beginning of organized sanitation by any railroad company in the United States. Just when the Pullman Company started its sanitary department I do not know but it was about the same time, and its importance to that company is shown by the fact that their sanitarian has a sign outside of his office door which announces "Department of Sanitation and Surgery," thus telling the world what the Pullman Company thinks of sanitation by placing the word before surgery.

Seven or eight years ago the St. Louis Southwestern, usually called the Cotton Belt, engaged the services of a sanitary engineer whose success was such that he was appointed consulting sanitary engineer for the Rock Island and Missouri Pacific, both of which roads now also have their own sanitary engineer inspecting sanitary conditions over their respective systems. Other class one railroads have men who though nominally acting in other capacities, really look after sanitation—this because their roads have found it to be necessary and important. It will undoubtedly come to pass that every road in the country will soon have a department of sanitation, profiting by the example set by the above named companies. This is as it should be for the teachings of the old axiom about the ounce of prevention being better than the pound of cure was never better exemplified than in the present time and statistics amply prove this assertion.

In writing this paper I have suffered from that unusual circumstance in such work, a superabundance of material and my only difficulty was to choose illustrative fragments which might have a greater interest to this assemblage of physicians; so in looking over the long list of subjects untouched but important I am choosing malaria to bring this paper to its close. The Illinois Central has nearly one-half of its territory located in a malarious southern region, and the malarial problem of the South is also our malarial problem and one over which we have spent much time and effort. Early in the fight prophylactic quinine was distributed and screening of camp cars and buildings was made with good results. The various Southern States through which the road runs have inaugurated campaigns in which the railroad has played an important part. In the old days the builders did not hesitate to take large quantities of earth to build elevations and this left depressions called borrow pits which held mosquito breeding water for considerable periods of time. These pits had to either be drained or filled and where the pit was of too great an extent, the surface had to be covered with a film of oil. This work of fighting malaria still goes on and with increasing success by reason of a campaign of education carried on among the people, who unfortunately had considered malaria as the inevitable but who now eagerly join in the fight and take their standard treatment of quinine to its bitter and triumphant end.

And now I must close with a thousand things unsaid but which lie very close to the present and future welfare of the people; let us fight the good fight with undiminished strength and enthusiasm, confident that we are on the right side and laying a firm health foundation for the generations to come.

DISCUSSION

Dr. S. C. Plummer, Chicago: I am very glad to see this subject called to the attention of this section,

because I don't believe the public at large realize there is such a thing as the railway sanitary problem. However, there certainly is such a problem, as you all know after hearing Dr. Beach's paper.

I want to congratulate Dr. Beach on covering the ground so thoroughly in such a short space of time, and I can not add very much but approval to what he said.

He spoke about Dr. Crowder's sign, "Sanitation and Surgery." With me the matter is reversed, it is first surgery with me, but I have to be a sanitarian in spite of myself on account of the position I hold with the railroad. I have given much more attention to the sanitary side of it in the last two years than I ever did before.

A little matter of history perhaps on what has given this problem an impetus in the last ten years might interest you. There was no national association in any way connected with the railroads that considered this matter until the federal government took over the railroads during the world war and at that time a section on hygiene and sanitation was organized. It worked out so well that after the railroads were turned back to their various controls and the federal government released them, the American Railway Association decided to have such a section. The American Railway Association is an association of long standing and it is attended by representatives of nearly all the railroads in the country, who meet together for conference and recommending rules of practice about the various things of interest to the railroad. For instance, they have their operating section and their mechanical section, and so on. Any recommendation they make is not binding on the railroads but the railroads interested nearly always adopt them, either exactly as recommended, or they adopt approximately the recommendation.

Therefore, the American Railway Association in 1920 formed its medical and surgical section and they have taken up systematically some of the problems which Dr. Beach has spoken about.

Two of their best pieces of work have been the formulating of a railway sanitary code and the systematic examination of water used for drinking and culinary purposes on trains.

Dr. Beach spoke highly of the sanitary code, and certainly it deserves to be spoken of highly.

Dr. Crowder, who has been a sanitarian nearly all the time he has been in the practice of medicine, specialized in this and has been connected with the Pullman Company in this capactiy, had a great part in formulating the sanitary code, but it was done in cooperation with the public health service, so everything in that code had from the beginning the approval of the surgeon general of the United States Public Health Service. That was a great advantage, and in addition to that, before this code was formulated, operating and railway men were called in, in conference, to see whether the provisions could be carried out in practice.

Heretofore, the great trouble with railway sanitation was that the ideal rules of sanitation were laid down without any inquiries as to whether they could be carried out or not. The problems in railway sanitation are peculiar to railways and some difficulties in applying them naturally arose. Dr. Beach spoke of the great difficulty that arose, because of the multiplicity of laws. For instance, in one state the railroad must supply drinking glasses, and in the next state it must not supply drinking glasses, and the next one it must, and the porter would be kept busy putting the drinking glasses in in one state and out in the next. Other laws were similarly hard to carry out, and, naturally, everybody thought it could not be carried out and couldn't be done anyway, and what was the use?

But now we have a code where the provisions can be carried out and they are being carried out.

As to the water examination, that was a difficult problem and in some states there was no authorized state, or even municipal, bureau. We had to make arrangements with private laboratories to do this.

Now the whole thing is coordinated in this way: The state board of health takes care of the examination. If there is anything wrong with the water supply they state what is wrong, and also recommend what changes are to be made to correct it. This goes to the surgeon general's office of the United States Public Health Service, and the report then is sent to the railroad giving permission to use the water or prohibiting its use or giving a temporary provisional certificate that will allow its use. Along with that, if there are any recommendations for improving the source they come back to the company.

In the company I represent these recommendations are immediately passed on to the operating department and I notice they take very prompt care of them, and it is only a few weeks until the report comes back that the condition complained of has been remedied.

There is one thing this sanitary code provided, and I think that is now complied with on all the railroads. That is in the water coolers, having the water and ice separate. You can have a good water supply in every way, but if you have ice carelessly handled, mixed in with the water, of course that offsets all the good of having your water in good condition, but with the separate container with the ice and water there is no danger from contamination of drinking water by the ice.

In the matter of periodic examination we need a little help in that in the way of educating employees to see that that is for their benefit, because it is for their benefit, but it is also for the benefit of the public, and, naturally, for the benefit of the railroad. A physically incompent employee in the train service, especially on the locomotive is a matter of risk for the public to say nothing of the possibility of property damage to the railroad.

A leading neurologist of Chicago said to me the

other day, "I never can get on a passenger train any more without wondering how the brain of the man at the throttle is working." He got into that state by having so many cases where he found locomotive engineers with general paresis that he feels he would like to be sure just what the physical condition of the engineer is before he gets on a train.

Most people never thought of that and what it means to them personally and the traveling public at large. Sometimes these cases go along pretty far before any attention is drawn to them, but if we had periodic examinations they would be discovered earlier. Men with angina pectoris are also a menace. Many of these cases could be helped and their lives prolonged, and their usefulness, if their conditions were known in time and there would be a place where a benefit would come to the employee if we had periodic health examinations.

As Dr. Beach says, the employees are suspicious of this thing and think it is a means to eliminate them from their jobs. This is not true at all and the American Railway Association has recommended highly that periodic examinations be inaugurated on all railroads and two large railroads have this in operation—the New York Central for at least three years, and the Chicago & Northwestern for about a year. The employees find it is not objectionable and very few of them are dropped out of service on account of this periodic reexamination, but many are fitted for further service and directly benefited.

The malarial control is the big proposition in the southern states and Dr. Beach has told you about what is being done there. The Rock Island has had an active campaign, carried on by a sanitary engineer whom Dr. Beach referred to, and using the engineering means which he spoke of, largely drainage, and oiling, but also the systematic, prophylactic administration of quinine. This work was started before the big flood and some progress made. Of course the flood made the proposition that year very much more difficult, but even so we did not fall behind any and no doubt the prevalence of malaria would have been much greater if this work had not been carried on.

THE FUNDAMENTAL BIOLOGICAL FACTORS EVIDENCED IN THE MENTAL MECHANISMS OF THE HUMAN MACHINE*

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We live in the motor age, made possible by the development of research within the whole range of scientific inquiry. Modern transportation on land, sea and the air, owes its progress to the indefatigable endeavors of the research worker, the experimentalist and the valiant, intrepid, daring of man. A cursory review of the applied sciences needed to make possible the flight of Lindbergh (including a study of the aviator himself), conclusively proves that this motor age is truly mechanistic and its record of acquisitions have become a part of the general knowledge of the world today. While this is true of current progress in mechanics and other applied sciences, combining the fruitfulness and rich promises of this motor age, yet, when we review the less enthusiastic study of the human machine, we find it obscured by reckless interpretations of speculative, rather than proved methods of science. On the other hand it is true that research in the field of medicine has brought about revolutionary changes that make it imperative to discard books written even ten years ago dealing especially with clinical medicine and its fundamental laboratory branches. But the human machine in its integrative mechanistic functioning and in its evolutional progress is yet the subject of much aggressive discussion for the want of the employment of earnest methods of study; notably, the same intensive methods used in clinical interpretation, actually pursued and adequately interpreted. To understand the human machine, we resort to the physiological method which has earned, rightfully, its position in the field of scientific research and, too, without hypercritically exposing the shortcomings of the speculative arm chair Freudian philosophers. The physiological methods, therefore, have long since demonstrated their reliability and need no defense. The work of Crile and his associates, of Cannon, Pauvalo, Sherrington, Tilney, Mott, Watson, and others should enthuse workers in the clinical field of neuro-psychiatry, as proof positive of the place the biologic sciences should occupy in the interpretation of clinical problems. Especially applicable are the workings of the human machine when through disorder, we find faulty correlative changes, proving that every nervous and mental phenomenon is the result of manifest energy in the elements of the nervous system. Crile has proven, to the satisfaction of most clinicians, that man and other animals are bipolar mechanisms. And that the organs, the cells, the functioning parts, both in health and disease, in their substance, undergo

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chemical synthesis and have universal circulation of energy, that is, electrical conductive affinity in the generation and expenditure of nervous energy. Further, that the products of conversion of potential into work energy are acid in their reaction; that the acid-alkali balance is essential in transforming energy; that the nerve cells in mental functioning, as in thought formulating an idea, display the same chemical process as found in muscle after its functional activity. The display of energy is at the cost of highly organized matter, which undergoes degeneration or passes from a higher to a lower grade of being and the final retrograde products are similar in muscle and in nerve. The human machine has for its potential energy, nervous energy, generated by and stored in the brain and expended as work energy, when the demand is made. The correlative changes in nerve cells, to be noted after prolonged mental or nervous activities, explain the exhaustion, both in degree and kind, clinically noted in mild and extreme cases of mental disorder. As these facts can be proven by scientific methods demonstrable, without a doubt, why is it there is so much speculative, wild reasoning, even on the part of clinicians, who ought to know better? The energy, which is the basis of mind, may properly be compared with the gasoline in the container of the automobile, which is the basis of its motive power, awaiting the conversion from potential to work energy, through the intricate machinery of this modern Pegasus. The automobile cannot function without gasoline. The human machine cannot function without nervous energy (which is electrical energy) and necessary for the maintenance of normal life. The bipolar theory of Crile explains why universal connections among cells and organs and among dynamic units of the human machine, in its varied complexities, are essential to life and, in keeping with the fact, that all matter is electric in nature. All force is convertible into electricity, the universal force of creation, in living and non-living matter from the atom to man. Craig says, "Physiologically the living organism is a community of innumerable anatomically distinct unit cells, but biologically it lives and acts as a whole. Its behavior can be described or understood only in relation to its unity of individual existence, so much so, that mental function has been defined as the life reaction of the whole organism in distinction to the life of the separate cell units of which it is composed." In its psychology there is the same unity. The mind does not function apart from the body; the life of the organism is bound up with the lives of its constituent cells and is, according to Crile's bipolar theory, derived from them. Life is a matter of purpose, which is the satisfaction of the need of living tissue. How, then, are the multifarious needs of the constituent cells dealt with within the organism to permit unity of purpose, which alone, at any one instant, allows the reaction to environment to be effective? There are two methods, according to Craig, by which in a multicellar organism, such as man, unifying influence (interdependence) is established. 1. Continuity of the circulation of the fluids of the body. 2. The integrative action of the nervous system. 1. Continuity by the circulation of the fluids of the body and the rapidity of flow of the blood through the vascular system, make possible the differentiation of function within the organism through the constant profusion of blood fluids, so that each tissue element benefits by the work of the rest. The phylogenetic result has been the development of a complex organism, with anatomical groupings of its cells into organs of specific function. For example, the assimilation of oxygen from the environment, is carried out for all the millions of cells by one group situated in the lungs. And Crile's "kinetic chain" is another example of interdependence where the hormones of the organs of internal secretion figure in individual and in mass functioning. The interdependence of body cells has long been recognized, but it is not so generally realized that such interdependence necessitates uniformity of reaction throughout. Now, clinically every physician knows or should know, that great variations in the mental state are produced by disorder or lack of balance, metabolism due to lack of oxygen intake and more strikingly shown in the variations of functioning of the endocrine glands. Both are shown subjectively, in consciousness, as disorders of various kinds both in degree and kind, and overtly by the behavior or conduct reactions of the whole organism. The unity of response of the organism, including conscious mental state, is thus shown to be due to a great extent to the physical continuity of its parts effected by the circulating

fluids of the body. The type of response here is general and undifferentiated. Man is a motile organism (in this he differs from the vegetable organism) and requires an effector system to function in the very varied environments in which he finds himself. Therefore, he requires some method of distinguishing between external stimuli and of differentiating the mechanical actions of the effectors out into the environment.

2. Here, is where we note the second method of securing interdependence, the integrative action of the nervous system, with resulting unity of the organism, more complex in its development, and which establishes relationship between all parts of the organism, however distant and diverse in function, and yet will allow discriminative conduction. Sherrington, in his Yale Lectures — published in 1906, beautifully delineated the study of nervous reactions in the problems of function. He says "in the multicellular animal, especially for those higher reactions which constitute its behavior as a social unit, in natural economy, it is nervous reaction *par excellence*, integrates it, welds it together from its components and constitutes it from a mere collection of organs, as animal individual. The integrative action, he says, is different from the mechanical combination of the unit cells into a single mass, as in muscles, connective tissue in general, etc., and from chemical agency as in circulation of the blood, the endocrine glands, gaseous exchange, etc. The integrative action of the nervous system differs from the foregoing, in that its agent is not mere intercellular material, as in connective tissue, nor transference of material in mass as by the circulation; it works through living lines of stationary cells along which it despatches waves of physico-chemical disturbance, and these act by releasing forces in distant organs where they finally impinge. Hence, it is not surprising that nervous integration has the feature of relatively high speed, a feature peculiarly distinctive of integrative correlation in animals, as contrasted with that of plants, the latter having no nervous system in the ordinary sense of the word. The nervous system has highly specialized nerve cells which enable the most complex relationships to be set up between all the tissue elements of the body. The plasticity of the synaptic junctions which connect the different neurones allows an infinitely varied correlation of function, and that constant modification of effector response which is necessary in order that the organism may react effectively to the constant varying relationships in its own physiological state and to its constantly changing environmental situation. Since the nervous system is the physiological mechanism underlying that series of discriminative response, so scientifically delineated by Sherrington, Crile and others, and which have to do with the dynamic processes of life in which we include mental life, and since observations and experiment have shown that the subjective life (the consciousness), is in some way closely related to certain definite phases of nervous function, it is clear that the reacting capacity of the organism depends, to a large extent, on the structure and physiological function of the nervous system. In order to grasp the fundamental principles of mental function, it is, therefore, necessary to understand the broad principles that govern the nervous structure and its function. Crile has proven that the nervous impulse is electro-chemical, that unit cells of the organism as a whole are electric cells. Again, the clinical entity of life in mind and conduct proves that we cannot consider the body as a mere collection of mechanisms. The proper integration of these mechanisms is as important as the mechanisms themselves. While we accept the mental mechanisms as delineated by Freud, as a distinct psychological contribution to modern mental medicine, the facts of science prove the biophysical basis of mind, as not only the fundamental foundation of the evolution of the mind of man, but the very mental mechanisms themselves, account for his adaptation to the environment in which he lives and has his being. Especially is this true in meeting the excessive mental activity which modern life demands. The dynamic flux of nature wherein all things mingle into each other's being, good springing from evil and evil linked to good, emphasizes the fact that the world was not made for any one self-evaluer and no one can take himself too seriously or over-prize his being and doings. After all is said and done, if we reflect sincerely on the order of the universe, we find there is a mechanistic continuity of motion without end; a perpetual flux of the mighty tide of being and becoming through countless multifarious channels; there must be and is, a gradual transition from the most simple to the most complex, from reflex organization to mental organ-

ization and function. Man, as the crown of evolutional change, with progressive development of brain and mental organization (so interestingly studied recently by Tilney) to obtain his dominant position in Nature, must have capitalized the toil and experiences of countless generations to fashion and perfect his mentality to present day human needs and uses. And yet, the mechanisms with which he operates the mind, are practically the same as in primitive ages. Man's mental progress has been to adaptations brought about by education of the plastic mind, and ingrafting inherited social acquisitions, habits, modes of thought, etc. Such processes, with a background of vital vigor, and keeping in mind that every element of the body, enters into thought and feelings, even into the most abstract speculations, the concordant and unified energies of constituent cells being the positive determinants of every function, mental and bodily, it follows that barren, indeed, must be the methods that would put forth speculations as to ultimate reality—call it what you may, psychoanalysis, or what not, and leave out the necessary physiological antecedents—ignoring these factors as basic factors in the study of life in mind and conduct. Mind, in its capacity for adaptation, is restricted by the structure of the organism which harbors it. Our conscious subjective life is inexplicably related to the complicated pattern responses which are the function of the evolved nervous system.

Consciousness is a fact that the student of living things must take into account. It is true "that consciousness is something which, perhaps, we are better able to experience than define." And yet we all know that it is dependent upon the integrity of the cerebrum the balanced maintenance of its blood supply, the quality of the blood stream and its freedom from toxic products. Truly, these essentials are examples of the two mechanistic methods by which the multicellur organism of man maintains the interdependence and unity upon which life depends, namely, continuity by circulation of the fluids of the body, the rapidity and flow of the blood stream and the integrative action of the nervous system. Craig well says: "There is only one way by which a man may reconcile his scientific attitude with thee facts of conscious subjective life that are borne in upon him every waking moment. He must accept the two groups of phenomena, physiological and psychological, not as two independent realities but as the manifestations in two distinct forms of one process; the life of the organism. As the conscious awareness, in its constant fluctuation, accompanies the continual variation of nervous activity with a faithful temporal simultaneity, the one can never cause or react on the other, for the simple reason that determinism demands a time interval between the phenomena which it relates; the determinant must precede the determined in time." This is in keeping with the laws of dynamics and proves how both are necessary to the living being and are interdependent. "Thought processes can no more be conceived to occur independently of neural activity than an neural activity without thought processes. The elaborate self-consciousness we possess is a product of evolution, just as is the complex central nervous system. The one is psychological, the other physiological and each plays its indispensable part in the life of the organism."

Disorders of the conscious experience need not necessarily be the fault of the nervous system. The circulatory system may be responsible through chemical or physical disorder of the blood and set up a perfectly normal reaction in the nervous system and produce an abnormal state in consciousness. This is seen clinically, in varied drug and other toxic agencies. But let these agencies continue to act, the nerve cells will show disfunctioning as in exhaustion and toxic delirium. The cells and fibers may undergo degeneration and possible destruction. Some individuals are very responsive to toxemias in general, while others show an idiosyncrasy for certain drugs, such as quinine belladonna, etc., and to exhaustive stress. Clinical rehabilitation is dependent upon the degree and extent of involvement of the neurone units. The nerve cells are not the only cells of the body involved in the toxemias, as shown by Crile. Again, proving the interdependence clinically of the mechanistic biogenic functioning of the organism. Another clinical demonstration of this phenomenon, familiar to you all, is the emotional reaction to be noticed in the increase or diminution of certain internal secretions within the body, notably, disorders of the thyroid gland, as in exopthalmic goiter, where the specific hormone floods the organism, affecting the nervous system. Here,

we notice anxiety, stressful states, from mild nervousness to profound psychoses, in which fear and its radiations are responsible for a host of mental perturbations. Cannon has explained this mechanism and Crile has applied his surgical technique, to meet this almost universal morbid mental experience, in surgery of the thyroid. These examples illustrate the fact that the validity of conscious experience is dependant upon the integrity of function and structure of the physiological apparatus. Inasmuch as there is profound disturbance of physiological activity in mental disorders in general (the biogenic psychoses group) and the psychoses of toxic and those accompanied by physical disease, in particular, it seems to me that the clinical problems involved require us to keep ever before us, as previously outlined, the fundamental biologic factors as basic in our explanation of the phenomena. Further, that our therapeutics must recognize the human machine, as a whole, is in disorder. The whole elaborate complex, mental and physical (psychological and physiological)—needs overhauling and rehabilitation. The physiological health of the nervous system suffers from exhaustion; a steady depletion of reserve energy. Its anabolism cannot keep pace with the constant katabolic mobilization; there is a red balance on the account of the organism as a whole. The capacity of the nerve cells and of the endocrine glands is inhibited, perhaps fails or, at least, there is inadequacy to meet the demands in generating and converting potential energy into work energy. The autonomic nervous system suffers and where anxiety is a part of the problem, the sympathetic branch of autonomic, "cuts a channel through which all perceptive stimuli tend to overflow." Thus is established a vicious circle which if not broken leads to complete exhaustion and death. Physiologically, this morbid mechanistic state is the progressive disturbance of metabolism, that results from this vicious circle involving the endocrine chain and the autonomic nervous system. The instinctive defense reactions, delineated by McDougal, are shown in the feeling tones (emotional states), and conditioned autonomic and metabolic changes incidental thereto. The physiological resultants of this vicious circle are primarily, first, exhaustion and secondarily, those of deterioration incidental to involvement of the autonomic—endocrine systems. How are we to break through this vicious circle?

I am sure those of you who have followed my advocacy for years, of rest as the essence of treatment in all biogenic psychoses, toxic psychoses, etc., and the psycho-neuroses, will appreciate the rationale of the systematized rest, as paramount, in treating exhaustion wherever and however found. Now as this vicious circle is maintained by the presence of exhaustion, the human machine cannot function until it is rehabilitated, any more than your automobile can function when it fails to hit on all cylinders, or its function is inhibited by carrying an overload of waste products, in the form of carbon, in the cylinders. The human machine while it can be run in a service station for overhauling, yet, the element of complications possible in its intricate machinery, makes the question of diagnosis and correction of its faults, one of painstaking observation and prolonged treatment to re-establish the balance, renew the health which has so long been impaired by a long period of neglect. Rest is nature's method and is no experiment or fad even if some of our modern therapeutists are prone to side-track it, while psycho-analysis or some other cult usurps the right of way and attempts to pull the load. Again, traveling is a favorite prescription given by many uninformed physicians and friends. But experience, alas! proves the fallacy of such recommendations. Traveling aggravates the vicious circle, and, as an economic consideration, only adds to the expense, because sooner or later rest methods must be employed. Time is lost and the vicious circle more difficult to break through even by tentative travel suggestions. The clinical pathology of exhaustion is in evidence. The imbalance of the autonomic—endocrine chain, the loss of weight, sleep disorder, mental perturbation, singly or in mass, are certainly indications for rest. Take the biogenic psychoses, the treatment of which demands time an patience. The recoverability of these patients is based on rest; absolute rest in bed as the first requirement in all early and acute cases. To secure this stay in bed may require restraint if persuasion or peremptory orders fail. Here is where the personality of the physician and the nurse count for more than is given credit. Patience and forebearance, exercised in personal contact, win the battles as the confidence of the

patient is thus secured. Restraint as an adjuvant of treatment, humanely and judiciously used, is not the "bugbear" that the yellow press and uninformed individuals are prone to cry, from the front-page and on the street. We are treating the patient, not listening to hypercritcisms. The secret of sucess in breaking the vicious circle is in first, finding out his physical ailments by a thorough inquiry into all disfunctioning and then in a proper understanding of the situation in which the patient finds himself. Argument and persuasion are futile to clear away delusions, or attenuate hallucinations, especially noticed in toxic complications. It is essential that we grasp the patient's viewpoint and to accept it for the time being; patiently awaiting for rehabilitation through rest methods to clear the machinery of the mind, through readjustments of the body organism as a whole. Let me emphasize that until rehabilitation has begun to be in evidence, it is better to ignore mental incongruities and thus give nature a chance. Here is where isolation comes in to contribute its share as one of the best possible adjuvants toward recovery. Isolation is misunderstood by physicians, the relatives and friends. It is really the secret of the success of Dr. Weir Mitchell's rest treatment. It is as rational and useful today as forty years ago, when I first become acquainted with its principles. The English and German physicians have accepted these principles and apply them more successfully today, than many of our American practitioners. A very recent English publication endorses the rest treatment and its application in early mental disease. It also discusses the very formidable problem of relations and their invariable desire to intrude upon the welfare of mental cases by visits. The visits of relatives and friends constitute one of the greatest difficulties the physician has to encounter in the treatment of mental disorders. In the first place, especially in public institutions, distrust of the motives of the institutional service in wishing to isolate the patient confirms their suspicions, that all is not right in the care of the particular patient. The facts are, that the patient is receiving more kindly and considerate care in the institution than he has received in the average home. Secondly, the harm of a visit is usually shown in revival of circumstances, or conditions that have contributed to the patient's illness. The distress thus caused offsets all benefits accruing from hospital care and serves to prolong convalescence and perhaps permanently harm the patient. Then the busy-bodies, the cults, are apt to inject their profound knowledge to cause distrust of rational therapy, with resulting interference and harm to the patient's welfare. I always make it a practice when possible to explain the need, the whys and wherefores, etc., of treatment. Then comes the problem that the layman seeks the removal of the patient from hospital care as soon as acute symptoms of the illness have passed off and convalescence is beginning. Another point is that, since many patients appear much better in institutions than they realy are, their relatives begin to think that they made a mistake in sending the patient away from home. Nevertheless, if they remove the patient they will soon discover their mistake, as all acute symptoms will return. The reason for this is not far to seek, keeping in mind that exhaustion underlies all acute mental disorders and in the biologic and toxic groups in particular, the human machine requires time for adequate adjustment. Recovery is slow, irregular and too, is varied by the type of personality of the patient. The longer and quieter, the more isolation is enforced, the convalescence is better, more progressive and permanent, because the clinical facts of exhaustion are met by strict adherence to time tried principles. The other adjuvants of rest, viz: diet, hydrotherapy, occupational therapy, re-education to social life and its activities, are all parts of the therapeutic needed in bringing the mental machinery back to adequate clinical recovery. All are necessary parts of the technique which experience has solved. All seek rehabilitation of the individual. In the acute biogenic and toxic groups where the most formidable mental disturbances are encountered, internal medicine enters to meet the varied complications which require intensive consideration. Internal medicine, as a part of clinical medicine, recognizes its resopnsibility in many and very varied problems in which mind in life and conduct enter to confuse and distort the usual intrinsic and special factors. Likewise, psychiatry feels the need of internal medicine as its ally, in bringing to a focus many of its most formidable clinical problems. Good nursing requires tactful understanding and interpretation of the individual behavior reactions of patients. The

ultimate recovery of patients requires more than following the routine of physical rehabilitation. In fact, in most cases other than organic and especially true of acute exhaustive cases, the conduct the the patient reverts to a very primitive and infantile type, and the recovery, re-establishment of social adequacy, depends on the re-education which the experienced humane nurse is capable of importing. Here is where occupational therapy comes in to stimulate and stabilize creative interest. But to stress occupational or any other kind of therapy, before the patient can grasp or possess creative interest, is to court a relapse, especially if exhaustion has been, which it usually is, a considerable factor in mental perturbation. My final plea is to recognize the fact that the mind of man is governed by biological ways and means. Mechanistic if you wish to call them such, as the physical factors in a mental problem are more formidable, overshadow and are conclusively more in evidence than the so-called psychological or psychogenic. Further, that mental disorder is a reaction of the whole organism (the human machine)—to which internal and external influences cause it to be exposed. And, that it is our duty to recognize these etiological factors early; recognize the disorder as a mental problem, approach it in a scientific way; be governed by rational therapeutics which modern medicine and surgery and modern neuro-psychiatry dictate. Break up the vicious circle early. Do not let it become organized. Bring the family into your confidence, educate them to undestand their position and duty, as co-workers in the problem, in which all are concerned.

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EVERY DAY USES OF RADIUM*

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There is such a thing as every day use of radium. From this the inference may be drawn that radium is successful in a large number of cases. The discussion here will be limited to a few of the lesions in which radium has proven to be successful.

*Address before the North Shore Branch, Chicago Medical Society, November, 1927.

In carcinoma of the cervix radium has been used more often than in any one lesion. It is probably upon its action here that the reputation of radium has been built and its value estimated to date. Radium is essential in the treatment of carcinoma of the cervix. There may be some question as to that statement in early operable cases. Reports from various clinics show that the mortality is lower with radium even in early carcinoma than it is with any other method, due to the fact that there is no operative mortality to the radium. In advanced or moderately advanced cases there is practically no question but that radium is the agent of choice.

Radium is indicated in carcinoma of the cervix for several reasons. It is a simple matter to make an application of radium to a carcinoma of the cervix. It is easy to observe and to estimate the progress of the treatment and there are no organs nearby that suffer materially from the treatment. The uterine wall is thick, thus increasing the distance between the radium and other structures.

Several types of application may be used. The application of a capsule to the cervical canal is the most common. Interstitial application may be made by placing needles or inplants into the mass itself. Tubes or applicators may be placed surrounding the cervix within the vagina thus employing cross fire. Occasionally rectal application may be made or large amounts of radium may be placed externally surrounding the pelvis.

The problem of applying radium before operation or after operation is one still to be solved. It seems unnecessary to place radium in the cervix and, in three to five days do an hysterectomy. Probably intrauterine applications of radium have little effect upon the tissues beyond the organ itself. Post operative application of radium in the vault of the vagina might prevent a local recurrence that would otherwise appear. The statement is frequently made that after the uterus is removed there is no place to put the radium. Radium can be put almost anywhere.

The commonest method of applying radium to a carcinoma of the cervix is that of placing within the cervical canal capsules containing various amounts of radium and left there long enough to deliver from two thousand to five thousand milligram hours. The average dose would probably be from twenty-five hundred to thirty-five hundred milligram hours. The Stock-

holm Clinic, which presents perhaps the best end results, employs such a dosage intracervically. The screen in that instance is a metal of sufficient thickness to filter out the beta rays. There are many variations in the amount of radium and in the methods of application in the different clinics of the world. There has been some attempt toward standardization but there is still much to be accomplished.

Recurrences in the vault of the vagina after hysterectomy are frequently treated with radium and the results are satisfactory. If it should happen that that is the only place the malignancy exists, then it is certainly worth trying.

There are two types of reaction to radium. The primary or immediate general reaction is characterized by malaise, nausea and vomiting and it appears while the radium is in place often continuing for thirty-six to forty-eight hours. The second reaction comes with the changes brought about in the malignant tissue and usually appears about the second or third week. Locally the reaction becomes manifest from seven to fourteen days after the treatment and is practically completed by the sixth or seventh week. It is sometimes difficult to distinguish between reaction to radium and the beginning of a recurrence. If the dosage was incorrect or the lesion improperly irradiated, a recurrence may appear as early as the sixth week.

The prognosis in carcinoma of the cervix must be guarded. Patients under forty years of age do not do well. The lesion frequently grows so rapidly that a wide removal or thorough irradiation seems not to cut the lesion off.

The second group of conditions where radium is used almost daily is that of uterine bleeding, excessive menstruation or metrorrhagia. Small fibroids producing excessive bleeding will be shrunken or arrested by an application of radium or the hemorrhage will be stopped so that the patient regains her health and becomes a good operative risk. One single intrauterine application of radium will usually take care of these cases. Formerly women in the child bearing period were given 400 to 500 milligram hours so as not to produce an amenorrhea. Now 1,200 to 1,500 milligram hours are given. With the smaller dosage in women under thirty-five the amenorrhea will last from twelve to eighteen months when menstruation will be resumed. There have been reported a considerable number of normal pregnancies with healthy children following such dosage.

Radium is contraindicated in patients with acute or subacute adnexal infections or infections anywhere in the pelvis.

It is safe to say that from 85 to 95 per cent. of these cases are given permanent complete relief.

The third group of cases where radium is used almost daily is composed of epithelioma, leukoplakia, senile keratosis, etc. Benign conditions such as warts, moles, corns, papillomata and the like may be placed in this group since they are treated by approximately the same technique usually. Any given tissue can be completely destroyed with radium and that destruction fairly well limited. The technique of such radium applications ordinarily consists in the protection of the surrounding normal skin by means of lead foil one mm. in thickness allowing the beta rays to attack the lesion only. When the thickness of the lesion exceeds 2 or 3 mm. the addition of a considerable amount of gamma ray is necessary to insure complete destruction in the deepest part of the lesion. Flat unscreened applicators (glazed plaques) furnish the soft rays while additional radium may be placed on top of the plaque to supply the needed penetration. With superficial lesions full strength plaques applied for from one to three or four hours are sufficient. Deeper lesions or resistent benign growths require from 50 to 2 or 3 hundred milligram hours of the gamma rays.

The reaction in these cases is local only. It begins in five to seven days and lasts three or four weeks. Complete healing is the rule. Lesions having a diameter of 2 cm. or more heal slowly when the whole skin is destroyed. This is especially true of the lower limbs and in benign lesions. Malignant lesions practically all heal in six to eight weeks.

Ninety to 95 per cent. of all lesions in this group yield permanently. Recurrences usually mean unexpected resistance on the part of the lesion or faulty technique.

Cavernous hemangioma yields readily to the gamma rays from radium when applied about once a month keeping well under the erythema dose. The earlier in life these lesions can be treated the better. Babies can safely be treated

as young as three months of age. It is a mistake to delay treatment.

Many other lesions and conditions benefit greatly from the judicious and conservative use of radium. Cooperation and free open discussion between the radium therapist and the general practitioner or the specialist in whose field the lesion lies is most vigorously urged. Radium can be depended upon to do certain valuable things and its abilities should be known and employed in practically every specialty in the field of medicine. The better clinician the radium therapist happens to be, the greater good and the less harm will come from the daily use of radium.

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DISCUSSION

Dr. David S. Beilin discussed a number of pathologic conditions in which radium therapy is very important. The most common conditions are epithelioma of the lip, carcinoma of the tongue, carcinoma of the floor of the mouth and cheek, carcinoma of the antrum with metastases to the cervical glands. There is always a diversity of opinion as to which is the agent of choice in treating malignancy of the floor of the mouth or tongue or lips. The surgeon, of course, believes in surgery. The radiologists and radium experts feel that closer cooperation between the internists and the therapeutists would be of marked value to the patient.

In carcinoma of the breast with metastases to the axillary glands the same question arises. There is a marked difference of opinion as to the value of radium therapy in hyperthyroidism, toxic adenoma or goiter. Here again, is needed a cooperation between surgeon, internist and therapeutist. The agent of choice should be what seems best for the patient. In a patient with a basal metabolism of 40 to 60 and tachycardia, with impending thyroid crisis, a series of treatments with irradiation will make him a good operative risk.

There are a large number of other conditions treated every day in the week by individuals doing this type of work, carcinoma of the bladder and rectum, splenic myelogenous leukemia, Hodgkin's disease. The outstanding thing in regard to the treatment is that the distressing symptoms are relieved. A large number of these conditions, however, are not curved.

Dr. H. P. Saunders asked Dr. Larkin his opinion as to the advisability of using radium in young women with small multiple ovarian cysts.

Dr. A. J. Larkin, in closing, said the only condition in the ovaries which may be considered as complication to radium treatment is the so-called chocolate cyst which sometimes develop. He had had no experience in the treatment of young women with multiple ovarian cysts.

As to the action of radium upon the ovary, he believed that the results in uterine bleeding were not due so much to the effect upon the ovary as to that produced upon the endometrium which is rendered incapable of menstruation for a certain length of time.

PARANASAL SINUS INFECTION IN INFANTS AND CHILDREN*

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Until recently very little attention was given to the paranasal sinuses in infants and children as possible foci of infection. The tonsils and adenoids have received the brunt of attack. Many medical men are under the impression that the paranasal sinuses in children are as a rule negligible and devoid of infection. Such an idea has become strongly tenable mainly on account of the difficulty in the examination and study of these sinuses in children. Until recent years, nasal sinus disease in infants and young children was diagnosed only when accompanied by manifest complications such as orbital abscess, abscess of the cheek or mouth. Owing to the fact that in infants and young children the bone surrounding the sinuses is cancellous and soft, not hard and dense as in the adult, involvement of the bone with pronounced complications is relatively more common.

G. A. Rees in 1847 first mentions empyema of the antrum following orbital cellulitis and fistulous opening between the antrum and orbit. Several similar cases were reported in later years. The pioneers in sinus infection in children were Onodi and Killian. In this country Emil Mayer and Coffin were the first to emphasize this field with Coakley, Skillern, Mosher, and Dean following.

In 1911 Hubbard emphasized the rhinitis of scarlet fever as due to sinus infection and that such was common in the acute examthemata. The works of Oppenheimer in 1914 brought forcibly to the attention of pediatrists the importance of accessory sinus infection in children. Abt's recent system of pediatrics was the first text-book to describe paranasal sinus affections in pediatric practice.

The tremendous amount of work done by Dean and his co-workers at the University of

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Iowa has proven beyond doubt that paranasal sinus disease is a very important etiologcal factor in numerous diseases of infancy and childhood. Other observers have come to the same conclusions. Today, otolaryngologists and pediatrists consider sinus disease in children a distinct entity and realize that it occurs much more frequently than formerly supposed. The general practitioner more frequently sees these cases first so it is essential that he have a working knowledge of the pathology present to enable him to make a correct diagnosis or at least suspect the condition. Many of the children are brought to the physician not because of any nasal disturbance but because of some complication very remote from the original focus of infection, i. e., pyelitis, arthritis, G. I. symptoms. Heretofore, such conditions were treated routinely without the least suspicion that the nasal sinuses may be the underlying cause.

Consideration of the anatomical development of the paranasal sinuses is of great importance for a better understanding of infection in them. The accessory nasal sinuses are primarily evaginations of the nasal mucous membrane and develop from the middle and superior nasal meati except the sphenoid. The evaginating sacs by their joint growth and absorption of bone extend into the neighboring parts of the nasal wall and thus form the paranasal sinuses.

The antri or maxillary sinuses are always present at birth. From birth to the 8th year they enlarge at the rate of from 2-3 m.m. in each dimension. At birth the floor of each sinus is at about the level of the attachment of the inferior turbinate or almost on a level with the orbits with rudiments of the deciduous and permanent teeth below. With eruption of the teeth the floor descends to the position found in the adult.

All the anterior and posterior ethmoid cells are always present at birth. Their number vary from 8-15 on each side. Their size also varies. The frontal sinuses begin their ascent into the vertical plate of the frontal bone between the 18th-20th month. They are not very distinct or have any clinical value until about the 5th year. One or both frontal sinuses may be absent. The sphenoid sinuses begin to show as a recess about the 4th month and reach full development by the 10th year. They have no clinical significance until the age of 3.

Anatomically and typographically there are two series of sinuses: 1, those draining into the middle meatus below the middle turbinate include the frontal, antrum, anterior and middle ethmoids and aggernasi cells; 2, those draining into the olfactory fissure above the middle turbinate are the posterior ethmoids and sphenoids.

The pathologic changes in sinus disease in infants and young children are the same as those found in the adult. The stroma of the mucosa may be a dense fibrous tissue. There may be typical metaplasia or cyst formation in the mucous glands or infiltration of the mucous membrane with inflammatory cells. The periosteum may be enormously thickened and infiltrated with inflammatory cells. The bone may develop erosions and deposits of poorly calcified bone or spaces in the bone as result of absorption may be filled with fibrous tissue.

Acute rhinitis in infants is of importance because it may produce intranasal changes with a chronic discharge. The development of the accessory sinuses is greatly influenced by infection. By repeated and frequent examinations with the x-ray, Ingersoll and Carmody have demonstrated that infection retards the development of the paranasal sinuses. In other words, an underdeveloped sinus usually indicates chronic sinusitis.

There are 3 varieties of acute rhinitis to be found in the new-born: 1. Coryza neonatorum simplex which is due to air borne infection and which resembles the head cold in the adult. 2. Coryza neonatorum blenorrhea in which the discharge is profuse and purulent from the onset and is caused by the leucorrheal or gonorrheal discharge in the mother's vagina at the time of birth. 3. Coryza neonatorum syphilitica in which the nasal symptoms are manifestations of the secondary stage of inherited lues. At an early period of illness it may be difficult to determine which type is present. It is usually found that when a healthy infant develops coryza after birth the symptoms appear later, are less severe and of short duration. In the blenorrheic type the onset is within the first or second day of life with an abundant and persistent discharge of pus which sometimes contain gonococci, swelling of the nose and crusting of nostrils. Snuffles may be the first and for several weeks the only sign of a syphilitic infection. The

nose is drier and the thick discharge tends to crusting.

Jeans mentions an acute illness in infancy with symptoms referable chiefly to the gastrointestinal tract and occurs with such severity that death results if the condition is not relieved. Such an infant two months of age was referred to Dean's service and recovered promptly on treatment of the acute paranasal disease. Dean reports a two months old infant the cause of whose death two pathologists stated after necropsy was a nasosinus infection; also another infant aged six weeks which died while it was under treatment for an acute paranasal sinus disease. This infant had pus under pressure in every accessory sinus. The pathologist stated that sinus disease was the cause of death.

Many of the conditions which may result from infected sinuses in children may be found in the acute, subacute or chronic forms of sinusitis, the difference being one of degree.

1. Respiratory diseases—laryngitis, bronchitis, and bronchiectasis. The laryngitis and bronchitis frequently recur and are thought to occur by the inhalation route. Webb and Gilbert found a bilateral empyema of the maxillary sinuses as the most frequent sinus condition associated with bronchitis and bronchiectasis. Dennis, in analyzing 24 cases of bronchiectasis in his clinic, states that infection in the sinuses especially in the maxillary is so commonly found in bronchiectasis as to strongly indicate an etiologic relation. Mullins holds a similar view and gives the lymph drainage to explain it. In his experimental work he found the lymph drainage from the sinuses as follows: to the submaxillary glands and deep cervical nodes through the cervical lymph ducts into the great veins, the right side of the heart and the pulmonary artery to the lungs. Cone in Dean's clinic demonstrated to the writer a case of bronchiectasis in a child 10 years old associated with paranasal sinus disease which greatly improved when sinus treatment was added.

2. Nephritis and pyelitis. Jeans mentions a form of chronic interstitial nephritis accompanied by marked edema, diminished urine with large amount of albumin but without any change in blood pressure associated with a nasosinus infection especially the antrum. In 1923 Marriott and Clausen pointed out the relationship between sinusitis and parenchymatous nephritis (nephrosis). The causative organism was a staphylococcus isolated from the sinuses. The albuminuria and edema disappeared on treatment directed wholly to the nasal condition with no attention given to diet or other treatment. Cases of pyelitis have also cleared up in similar way.

Gastrointestinal disturbances. These are usually so severe that they are considered the primary trouble. Anhydremia, anorexia, malnutrition and chronic digestive derangement are due to the ingestion of purulent discharges from the sinuses according to Byfield. Breuneman emphasizes certain abdominal pains due to sinus infection.

4. Diabetes. Burgess in Dean's clinic discusses eight cases of diabetes mellitus in which the paranasal sinuses were definitely involved. These children who displayed backward progress in their school work were not only greatly improved mentally after treatment of the infected sinuses but also required less insulin units.

5. Asthma. In these cases very brilliant results followed treatment of the infected sinuses. Lierle in Dean's clinic reports on a series of 20 cases of asthma referred from the pediatric department. Foreign protein tests gave negative results. The tonsils and adenoids had been removed. On treatment of the infected accessory sinuses the results were gratifying in most of the cases. Byfield reports 3 cases of asthma of long standing with frequent attacks which were markedly reduced after treatment of the nasal sinuses. Similar results have been observed by other investigators. The absorption of bacterial protein from an infected sinus may be an etiologic factor.

6. Arthritis and periarthritis. Of 20 cases of arthritis deformans treated intranasally by Dean, 17 were greatly benefited. Quoting Jeans: "To see a child with deforming arthritis associated with bouts of fever become comfortable and afebrile and to see function gradually restored as a result of treatment of sinus disease is impressive, especially when in former years one has been accustomed to see all efforts unavailing and the disease become progressively worse."

7. Head complications. (a) Otitis media and mastoiditis occur usually with the acute form of sinusitis. (b) Encephalitis lethargica has

been found associated with paranasal sinusitis. Montgomery has seen several such instances. Yates and Barnes report 23 cases of encephalitis lethargica in which they found inflammation in and around the sphenoids. (c) Meningitis occasional. The writer has seen one case. (d) Cervical adenitis is frequent. (e) Neuralgias (due to irritation of the nasal ganglia). (f) Eye complications such as phlyctenular conjunctivitis, retrobulbar retinitis, optic neuritis, orbital cellulitis and abscess.

8. Recurrent fevers of unknown origin. Dean reports several cases of recurrent attacks of fever with no demonstrable cause. Treatment of the infected sinuses present stopped further recurrences. Cases of cyclic vomiting and acrodynia have been reported as benefited by paranasal sinus therapy.

Symptoms—In acute sinusitis the symptoms are so characteristic that the diagnosis is readily made. We find fever, restlessness, irritability, poor appetite and a tickling cough. Within the nose are to be seen profuse mucopurulent discharge anteriorly and also postnasally on patient gagging, swollen turbinates covered with discharge. The alae and upper lip may be excoriated and mouth breathing is the rule.

In chronic sinus infection discharge may not always be found in the nose but crusting just within the vestibule is common. There may be a peculiar twang to the voice, hoarseness, coughing on lying down or a dry, unproductive cough, sneezing in the morning on arising with or without nasal discharge, lack of energy, backwardness in school, loss of weight and appetite, some anemia and palpable cervical lymph glands.

Diagnosis. There are 3 prominent symptoms in chronic paranasal sinusitis: 1. nasal discharge, 2. nasal stoppage, and 3. below par physically. If one or more of these symptoms remain after removal of the tonsils and adenoids paranasal sinus infection should be strongly considered. In a closed empyema of a sinus no discharge may be found in the nose. In infants nasal discharge may not be noticed if it is postnasal. If a discharge found in the vicinity of an ostium of a nasal sinus is wiped away and reappears in a few minutes, sinus disease is present because the nasal mucosa cannot produce secretion so quickly. This is especially true after shrinkage of the turbinates. Repeated examinations may be required before a diagnosis can be established.

The x-ray is the most direct means of establishing a definite diagnosis. By it the presence or absence of a sinus is made and any difference in both the density and contour of the cells is noted. The nasopharyngoscope is of value in older children who will permit its use and in small children while under an anesthetic. Anterior rhinoscopy is unsatisfactory in most children while posterior rhinoscopy is impossible. Trans-illumination of the sinuses is unreliable. The diagnosis of maxillary sinusitis is confirmed by endonasal puncture, aspirating and culturing. The diagnosis of sphenoidal infection is obtained by sounding, aspirating and culturing.

In the differential diagnosis one must consider, 1. nasal or postnasal obstructive lesion, 2. nasal rhinolith or foreign body in the nose, 3. atrophic rhinitis, 4. infection of the nasal mucosa without sinusitis, 5. syphilis of the nose, 6. tuberculosis of the nose.

Treatment. The treatment of nasosinus infection in infants and children is a difficult one on account of the age of the patient and should only be undertaken by a rhinologist. Hospitalization is essential. Surgical drainage must be established followed by a prolonged and tedious after treatment. Sometimes nasal irrigation, suction and argyrol instillation are sufficient. Along with the surgical procedure these patients should receive a diet high in fat A vitamins as indicated by the experimental work of Amy Daniels, Lambert, and Judkin. Proper hygienic conditions must not be overlooked. According to Dean and others about 80% of the chronic paranasal sinus infections clear up after the removal of the tonsils and adenoids.

CONCLUSIONS

1. Paranasal sinus infection in infants and children is an established entity and occurs at any age.

2. The paranasal sinuses may act as foci of infection in conditions remote from the original foci.

3. These little patients are frequently brought to the physician for relief of a condition far removed from the nasal sinuses which may be the infective source.

4. The paranasal sinuses should be considered and studied in all diseases of unknown origin.

5. In order of greatest clinical value are the maxillary sinuses, ethmoids, sphenoids and frontals.

6. The focus of infection may still be in the sinuses after removal of the tonsils and adenoids.

Lastly, if this paper attracts more attention to this phase of focal infection in childhood it has served a useful purpose.

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THE McKINLEY TEST FOR EPIDEMIC ENCEPHALITIS LETHARGICA*

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The etiology of epidemic encephalitis lethargica is unknown and the theories about the etiology are in conflict with each other. About four-fifths of the American men believe with Rosenow of the Mayo clinic that it is caused by a certain strain of green streptococcus. About one-fifth of the American men believe it is due to a virus, a certain kind of herpes virus. In Europe the proportions are reversed; only about one-fifth of the men believe it is due to a streptococcus and about four-fifths believe it is due to a virus but think it is not related to the Leviditi virus.

Dr. Earl B. McKinley, while at the Pasteur Institute at Brussels, Belgium, when working in Bordet's Laboratory, having been sent there by the National Research Council, Washington, was able to infect rabbits with herpes virus. Dr. McKinley continued this work while at Columbia and is now at the University of Manila in the Philippines having been sent there by the Rockefeller foundation. We are fortunate in having some of Dr. McKinley's material with which to work.

I have here to present to you the brain of a rabbit which died three and one-half days after being injected with an emulsion of the brain of a rabbit which died from inoculation with this virus. In other words, this virus has been kept alive by passages from one rabbit to another. The brain is preserved in 50 per cent. glycerin.

In this small sealed tube, I present a coarse pink granular powder which is similar rabbit brain substance, the tissue having been dried in a cold vacuum using the same technique in preparation that is used with the spinal cords of rabbits in preparing rabies vaccine. This dry powder, or one may use about a gram of the brain substance from the glycerin solution, is put into suspension in salt solution, and when filtered until clear is the antigen for what I call the McKinley test.

The filtering of preserved brain or dried brain is technically difficult. It is best accomplished by macerating the tissue with a little salt solution, diluting 1:50, centrifuging, filtering through coarse filter, and then filtering through celite. Celite is a diatomaceous earth procurable in pound lots from the Central Scientific Company, Chicago, and a sample of it is in this tube, a very light gray powder. A suspension of celite is poured over the filter to make it denser before the once filtered supernatant fluid from the centrifuge as filtered.

In these two flasks are solutions of antigen. The one which has some cloudiness has been centirifuged and then filtered through ordinary coarse filter paper. The other which is clear as water has in addition been filtered through celite on filter paper. The latter is the one used in this test.

This clear water white solution of antigen containing the E. E. L. herpes virus is added to an equal amount of spinal fluid. Usually one cubic centimeter of antigen and one cubic centimeter spinal fluid are added together and mixed. The mixture is incubated for three hours at 37° C., and then placed in the ice box over night. A fine light gray precipitin is formed in cases of

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E. E. L. (epidemic encephalitis lethargica) and slightly heavier gray precipitin is formed in cases of multiple sclerosis. All other spinal fluids heretofore tested show that no precipitin is formed. This precipitin is so slight and difficult to see that it is best read in a dark box. I herewith present you three test tubes in a dark box with slits on each side of the test tubes the box contains: one shows the grayness of the multiple sclerosis reaction and is so labeled, and the other which is water white is a case of encephalitis associated with meningitis following otitis which followed scarlet fever.

Incidence of This Disease.—This disease is now pandemic in America, but there are more cases in some communities than in others. In Wisconsin about one out of every two thousand of the population have E. E. L. and with several hundred needing institutional care; whereas, in Rhode Island there have only been five cases of this disease diagnosed as such requiring confinement in Butler Hospital. There has been no laboratory test to aid in diagnosing this condition. Clinically some cases have been erroneously diagnosed E. E. L. and in many cases the diagnosis of E. E. L. was not established. The McKinley test seems to differentiate it from all other conditions except multiple sclerosis, and it is likely that multiple sclerosis and E. E. L. are related diseases. This test has not been tried yet on post mortem spinal fluids in cases of E. E. L., multiple sclerosis, or paralysis agitans, nor has it been tried on post mortem suspension of brain, spinal cord, or sympathetic ganglia in any of the three diseases just mentioned.

This antigen is not yet being made on a quantity production basis. In order to check on our work on confirm or dispute it we have sent bits of antigen to clinical men and to laboratory technicians at Harvard, Johns Hopkins, University of Wisconsin, Philadelphia and New York.

If ultimately working with this virus a serum is developed (and it is too soon to speak of that at any greater length) then this diagnostic McKinley test will be needed to ascertain what patients should have specific serum therapy.

CONCLUSIONS

The McKinley antigen for diagnostic spinal fluid test in cases of epidemic encephalitis lethargica appears to be specific, whether there is used an emulsion of rabbit brain preserved whole in 50 per cent. glycerine to preserve the E. E. L. herpes virus, or whether the brain is preserved by being dried in a cold vacuum.

Further work on this material by other workers is being done, and until their work is reported the test can not be regarded as established.

This antigen is not yet made in quantity amounts.

It is probable that multiple sclerosis and maybe paralysis agitans also are clinical forms of epidemic encephalitis lethargica.

Diagnosis of E. E. L. on clinical findings alone is not sufficiently accurate, as some cases are erroneously so diagnosed and as some other cases are erroneously mis-diagnosed "Not E. E. L."

This herpes virus antigen for E. E. L. is the basis for further research towards evolving a specific therapeutic serum.

Research institutions and foundations or councils, favored by private endowments, are more productive of advances in science than commercial hospitals.

185 N. Wabash Avenue.

SLEEPING SICKNESS VICTIMS STUDIED WITH MOVIES

Washington.—Motion pictures now aid in the solution of some of the medical problems caused by the prevalence of encephalitis lethargica, sleeping sickness, in the period since the world war.

At the meeting of the American Neurological Association here Dr. S. P. Goodhart of New York City projected a film made under the direction of himself and a group of colleagues showing some of the extraordinary types of involuntary movements of patients, mostly children, suffering from this little understood disease. By running the pictures ultra slow, the grimaces and contortions of the patients can be studied and knowledge of symptoms of rare cases can be disseminated to large numbers of physicians.

TWINS CALLED SAME BIOLOGICAL PERSON

Washington.—Identical twins are biologically the same even though they are physically divided into two individuals. This is the novel twin theory expressed by Dr. J. M. Wolfsohn of San Francisco and Dr. S. A. Kinnier Wilson of London before members of the American Neurological Association here.

The specialists described four sets of identical twins each pair of which suffered from the same form of organic nervous disease. One set developed diabetes at the age of fifty-two and both died of acute apoplexy at the age of fifty-nine.

ORGANOTHERAPY

Such is the glamor shed over these glands by zealous enthusiasts and by commercial exploiters that we are apt to assume a much greater knowledge than we really possess.

Of the great number of endocrine products on the market, those of known potency in substitution therapy are (1) thyroid and thyroxin; (2) insulin; (3) parathyrin (Collip).

Of known potency as pharmacodynamic agents in conditions other than those due to disturbance of the glands in question are products of the medulla of the adrenal gland (epinephrin, adrenalin) and products obtained from the poster lobe of the pituitary gland (pituitrin, pituitary liquid, hypophysin).

There are very favorable reports of other potent agents developed in animal experimentation. One of these is from Evans, Smith and their associates at the University of California, who have secured an extract of the anterior lobe of the hypophysis which is protein free and sterile and which has caused a marked gigantism in rats when injected intraperitoneally. Allen and Doisy of St. Louis have demonstrated an ovarian hormone from the liquor fo fo??ruli of hog ovaries.—From "Notes on Endocrinopatines," by T. P. Sprunt, M. D., Baltimore, *New York State Jouranl of Medicine,* July 15, 1928.

ONLY GOD CAN MAKE A TREE

I think that I shall never see
A poem lovely as a tree.
A tree whose hungry mouth is pressed
Against the earth's sweet flowing breast;
A tree that looks at God all day
And lifts her leafy arms to pray;
A tree that may in Summer wear
A nest of robins in her hair;
Upon whose bosom snow has lain;
Who intimately lives with rain,
Poems are made by fools like me,
But only God can make a tree.

—*Joyce Kilmer.*

First Co-ed (noticing sign in the library): "Only Low Talk Permitted Here."

Second Co-ed: "Fine, now I can go on with the story I was telling you."—Oklahoma *Whirlwind.*

Dentist—Now, I am not going to hurt you at all, so just—

New Patient—Cut out the professional chatter, old man. I'm a dentist myself.—*Answer,* London.

Marriages

EDWIN JEAN BLONDER to Miss Beatrice Byrl Provus, both of Chicago, September 4.

SETH EDWIN BROWN, Evanston, Ill., to Miss Lydia Joy Lacey of Chicago, June 30.

MAC HARPER SEYFARTH, Freeport, Ill., to Miss Dorothy D. Smith of Sioux City, Iowa, July 11.

ROSS EDGAR HUNT to Miss Marie-Louise Witbeck, both of Belvidere, Ill., September 20.

Personals

Dr. Guy H. Jacobson, Taylorville, has been appointed county physician, it is reported, at a salary of $10,000.

Dr. Arthur J. Rissinger has been appointed health officer of the village of Lake Bluff.

Dr. Andrew M. Harvey, LaGrange, has been elected president of the Knox College Alumni Association for the ensuing year.

Dr. G. Henry Mundt, Chicago, addressed the Kane County Medical Society at Elgin, September 12, on "The Social Aspects of the Practice of Medicine."

Dr. John W. Hopkins, for several years a member of the staff of the Hinsdale Sanatorium, Hinsdale, has resigned to accept a similar position at the Glendale Sanatorium, Glendale, Calif.

Dr. Martha Anderson, South Bend, Ind., has been appointed medical director of the Adams County Tuberculosis Sanatorium, Quincy, effective October 1.

Dr. William K. West, who has been surgeon in the mines of the Copper Range Company, near Calumet, for twenty-three years, has resigned and will move to Hinsdale, Ill.

Dr. Arthur J. Cramp, Chicago, Bureau of Investigation, American Medical Association, addressed the surgical section of the Wayne County Medical Society, September 25, on "Quacks and Nostrums," and previously broadcast over station WGHP.

News Notes

—During the last year the Chicago Medical Society conducted thirty-two scientific programs, seven of which were presented by out-of-town guests.

—The Morris Hospital, Morris, recently laid the cornerstone of its new building. The hospital was founded in 1906 by a group of physicians.

—Although convicted by a county court in June of practicing without a license, S. G. Brown, a chiropractor of Princeton, was arrested again in August, it is reported, and charged on

forty counts with violation of the state medical practice act. He was fined $250 and costs at his criminal trial in June. A new trial was denied and his attorney gave notice of appeal to the supreme court. The counts in the new information before the court represent, it is said, violations of the medical practice act since Brown's previous trial.

—The University of Chicago has arranged to give a series of public lectures on Thursdays, at 6:45 p. m., at the Art Institute, Michigan Avenue and Adams Street, on the general subject of "Medicine Through the Ages." This service is a continuation of the service to the public proposed by President Harper at the time the university was organized. Tickets for the course of lectures are on sale at University College, room 1100, 116 South Michigan Avenue, or at room 202, Cobb Hall, University of Chicago, they are not on sale at the Art Institute. The medical course for the autumn quarter will be as follows:

"Hippocrates and Galen," Dr. Morris Fishbein, October 4.

"Vesalius," Dr. Basil C. H. Harvey, October 11.

"Harvey," Dr. Anton J. Carlson, October 18.

"Sydenham," Dr. Franklin C. McLean, October 25.

"Paracelsus," Dr. Fishbein, November 1.

"Lister," Dr. Dallas B. Phemister, November 8.

"Paré," Dr. Harvey, November 15.

"Koch," Dr. Esmond R. Long, November 22.

"Behring and Roux," Dr. Charles P. Miller, Jr., December 6.

"Pasteur," Dr. Ludvig Hektoen, December 13.

—For the first time in years, the city commissioner of health says there has been a distinct increase in the number of cases and deaths from diphtheria in Chicago. In eight months of 1928, there were 292 deaths among 2,877 cases, a fatality rate of 10.1. The increase in deaths has been relatively much greater than the increase in cases. A similar experience is being reported in other communities and countries. There has been no outbreak of diphtheria during the year in any special group and no evidence of a common factor of distribution, but rather an increased dissemination of the disease throughout the city. The commissioner appeals to the physicians to assist in lowering the mortality rate from diphtheria by immunizing children under their charge, especially those between 1 and 10 years of age, by means of toxin-antitoxin. The department of health will not immunize of its own accord, it is said, until the physicians have had an opportunity to do their share. Toxin-antitoxin may be had free of charge at room 707, city hall.

Deaths

JOHN C. AUGUSTINE, Batavia, Ill.; Bannett College of Eclectic Medicine and Surgery, Chicago, 1876; formerly bank president; aged 77; died, June 8, at the Community Hospital, Geneva.

WILLIAM ALOYSIUS BENNETT, Chicago; Georgetown University School of Medicine, Washington, D. C., 1895; a Fellow, A. M. A.; aged 55; died, August 20, of acute myocarditis.

RICHARD W. BOVEE, St. David, Ill.; Hahnemann Medical College and Hospital, Chicago, 1894; formerly county coroner and mayor of St. David; aged 61; died, August 6.

JOHN E. CLINTON, Whittington, Ill.; American Medical College, St. Louis, 1896; aged 64; died, August 31, at the home of his daughter in Benton, of carcinoma of the liver.

PETER CRAWFORD, JR., Chicago; Hering Medical College, Chicago, 1913; aged 43; died, July 12, of meningitis.

RUSSELL JOSEPH ERICKSON, Chicago; Loyola University School of Medicine, Chicago, 1926; aged 30; died, June 24, at Hot Lake, Ore., of lobar pneumonia.

ROBERT COOPER FULLENWEIDER, La Salle, Ill.; Rush Medical College, Chicago, 1896; a Fellow, A. M. A.; on the staff of St. Mary's Hospital; aged 58; died, August 10, of cerebral hemorrhage.

FRED HARRISON GLASCO, Alto Pass, Ill.; Loyola University School of Medicine, Chicago, 1917; aged 39; died, July 17.

KARL S. HUMMELAND, Maywood, Ill.; Jenner Medical College, Chicago, 1908; a Fellow, A. M. A.; aged 66; died, August 14, at the Oak Park (Ill.) Hospital, of heart disease.

FRED DAVID JACKEY, Chicago; Denver and Gross College of Medicine, Medical Department, University of Denver, 1907; past president of the Clark County (Wis.) Medical Society; aged 59; died, June 14, of cerebral thrombosis.

COLONEL MANFRED JOHNSON, Harvard, Ill.; University of Michigan Medical School, Ann Arbor, 1875; on the staff of the Peck's Hospital; aged 74; died, June 24, of nephritis.

JOSEPH THEODORE SPECK, Chicago; Rush Medical College, Chicago, 1897; aged 58; died, March 12, of myocarditis and cerebral hemorrhage.